

Book Of Posters

International Congress on Health Sciences and Medical Technologies 2024



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Preface

Presentation

International Congress on Health Sciences and Medical Technologies 2024: ICHSMST'24 is the 8th edition following several editions held online in 2021, and 2023 adding to in-person: Tlemcen, Algeria (2016, 2017, 2019 and 2022) and Algiers Algeria (2018). It is an annual congress containing several conferences and workshops focusing on Medical technologies and health sciences.

Submissions

Received: 127
Accepted: 91
Posters: 42
Acceptance: 71.75%

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ICMT'24	International Conference on Medical Technologies
ICCPH'24	International Conference on Cancer and Public Health
ICPBS'24	International Conference on Preclinical and Basic Sciences
ICGI'24	International Conferences on Genetic Items
ICEEP'24	International Conference on Education Ethics and Publishing

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ICMT'24: International Conference on Medical Technologies 2024

Detecting Lesion on Dermoscopic Images using YOLO Algorithms

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Abstract

Nowadays, skin cancer is a major problem human beings are facing which claims the greatest number of lives each year. Moreover, skin cancer occurs when errors occur in the DNA of skin cells, it begins at the top of the skin. Melanoma is the most dangerous skin form of skin cancer when compared to the other types. According to the Skin Cancer Foundation, there will be a 7.3% increase in newly diagnosed cases of melanoma in the world in 2024, along with a 3.8% increase in melanoma-related deaths. To begin we propose a deep learning approach to detect and predict the cause of skin cancer based on historical clinical image data using the YOLOv8 algorithm. Therefore, YOLOv9 was utilized to detect the region of interest (ROI) in two publicly available datasets HAM 10000 and PH2.

Keywords:

Dermoscopic Image, Skin Cancer, Skin Lesion, Deep Learning, Object Detection, YOLO

Introduction

Artificial Intelligence (AI) is the application of several approaches that allow machines to mimic a kind of genuine intelligence. As a result, the world is currently undergoing a significant technical improvement in all fields. A new phrase known as deep learning has emerged in recent years. The approach is based on the You Only Look Once (YOLO) method of computer vision, which is utilized in various artificial intelligence applications to identify and localize items inside an image and allow a machine to learn on its own. AI is being implemented in several industries, including healthcare. Skin cancer is defined as the uncontrolled growth of abnormal skin cells, primarily caused by damage to the skin, often due to ultraviolet (UV) radiation from the sun or tanning beds. This condition typically manifests in the epidermis, the outermost layer of skin, and can lead to the formation of malignant tumors if not treated early.

Material and Methods

In this paper, we used YOLOv9 and YOLOv8 to assess their effectiveness in the detection of skin cancer lesions. We start with data collection ends with using YOLOv9 and YOLOv8 for detection. The data that have been used in this work is HAM 10000 and PH2 which are a publicly dataset, the first data contains 10015 dermoscopic images divided into seven classes which are : melanoma (MEL), melanocytic nevus (NV), basal cell carcinoma (BCC), actinic keratosis (AKIEC), benign keratosis (BKL), dermatofibroma (DF) and vascular lesion (VASC). And the second data contains 200 dermoscopic images, The PH2 dataset consists of 80 atypical nevi, 80 common nevi, and 40 melanoma cases. The total size of the dataset is 200 lesion images. To summarize, YOLOv8 is now outperforming YOLOv9 in terms of precision and recall measures, even though YOLOv9 brings significant architectural innovations targeted at increasing accuracy and efficiency. The decision between the two models should be based on the particular needs of the application, taking into account the requirements for accuracy, speed, and computing economy.

Results

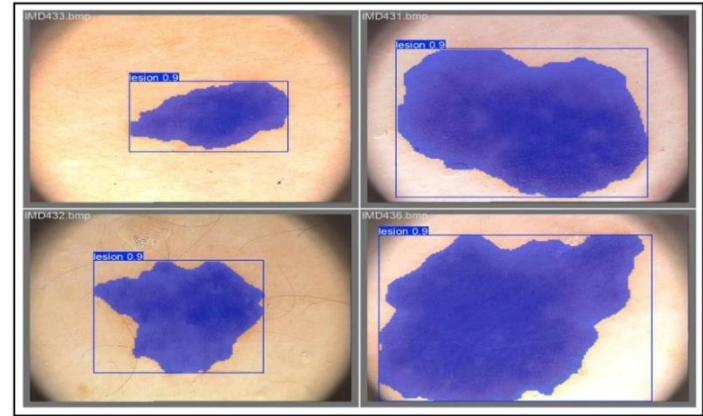


Figure1. Lesion Detection using YOLOv8

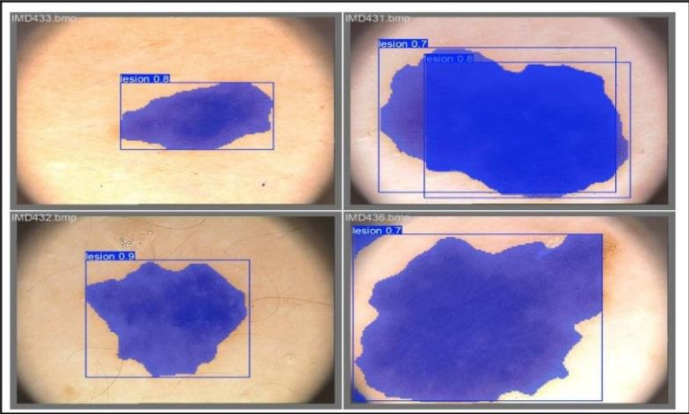


Figure 2. Lesion Detection using YOLOv9

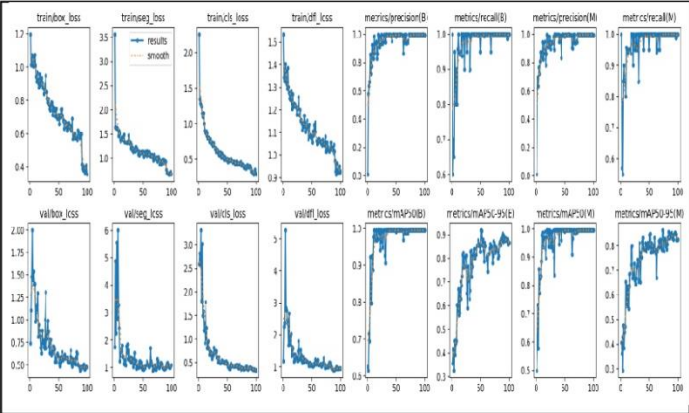
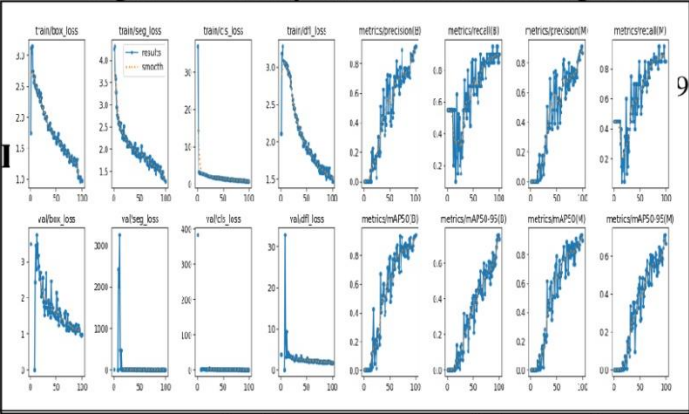


Figure 3. Accuracy and Loss Function using YOLOv8



In our study the results demonstrate visually how well our YOLOv9 and YOLOv8 segmentation models for skin lesion object detection perform. Through the use of graphs, photos and visualization we aim to provide qualitative perspectives about the accuracy and effectiveness of our proposed approach.

Conclusion

Many disorders connected to the skin can only be diagnosed with the use of image analysis. Early detection of a skin lesion and the results of the initial smears can result in an instant diagnosis and the start of therapy. Deep learning techniques are utilized in the recommended strategy to identify regions of interest (YOLO v8 and YOLO v9). We provide object detection techniques for photos of skin lesions in this paper. The research community has recently focused a great deal of time and attention on the subject of segmentation algorithms. This has led to the development of several approaches to tackle the deep learning issue.

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Improvement in obtaining organs for people with reduced mobility

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Abstract

Medical technologies have a turnover that is constantly growing from one country to another. Some, necessary for the various joints functioning (shoulder, hips, knee...) damaged, are directed towards key products, such as prostheses. The control of manufacturing processes and their modeling now significantly improves the quality of these prostheses. However, the precision of the prototypes is an absolute priority for the complex geometries corresponding exactly to the reference data. The completed form quality and the computer-aided design and manufacturing (CAD / CAM) model of total knee prosthesis damaged joint didactic prototype. The goal is to generate a CNC code, for the considered form using different 3D Printers to ensure better performance of quality and productivity. Their implants realization knows a permanent evolution due to the Rapid prototyping new techniques. The proposed study is based on a first step on reverse engineering techniques to determine the articulation model. In a second step, the consumable (polymer) choice surfaces with different constraints (position, geometry...).

The last step is for verification and results discussion.

Keywords:

3D Printer, Rapid prototyping technology, Computer-Aided Design (CAD) data, Consumable material (ABS), Reverse Engineering

Introduction

The rapid prototyping refers to technologies that can directly realize physical models from Computer-Aided Design (CAD) data. The advantage: It can make almost any shape produced. That save Time from 50 -90 %compared to conventional methods. The Rapid prototyping techniques are additive or Subtractive manufacturing.

How to turn uncertainty into opportunity for anyone
Needing help in their life. This operator tries, therefore, to manage this phenomenon by innovation / 3D printer.

The CAD model of the head of the femur of the knee prosthesis, after creating the 3D model of the knee joint, graphical models of knee prosthetic implants are developed based on the surfaces of the joint elements. These implants are used as substitution elements altered bony parts.

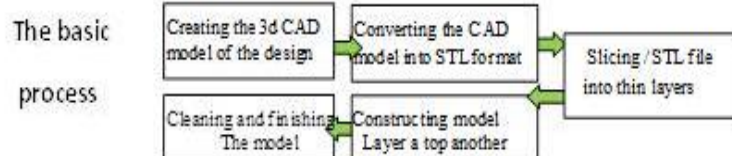


Material and Methods

The Object it's to be Build is modeled with the CAD model creation. Using a CAD software package or by using a laser scanner or a Coordinate Measuring Machine (CMM) (Reverse engineering). How to turn uncertainty into opportunity for anyone needing help in their life. This operator tries, therefore, to manage this phenomenon by 3D Printer innovation. The Reverse engineering it's the Scan product then we compare the final product with the starting prototype.



Figure 2. The Knee Implants Conception's "CAD"



Results

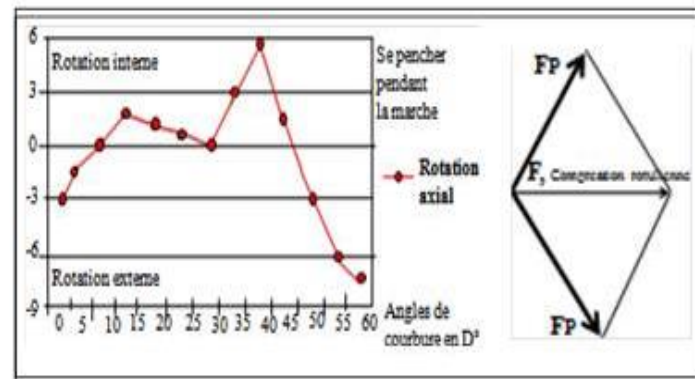


Figure3. Leg Rotation Movement Diagram



Figure1. image1: The Woman's forearm

Image2 and 3: The Conception's CAD and realization hand

Discussion

This woman lost her hands by accident, and she came to the laboratory to make them as a 3D prototyping printer. There was therefore, a preliminary study then a realization of knuckles of the fingers then the apple of the hand and then the assembly of these phalanges sees photos above. Remains an important and delicate part, which is still in study, the control of psycho technical movements.

We have the domain of the STL conversion for a triangulation the prototype structuration (the lower part of the femur), by Solid Works software. The picture on the right we reconstitution of all the room, implants of the patella. Viewed in the frontal plane, the charge is not evenly distributed on the internal condyles (more congruent) supports the most load while the external is solicited during the swinging phase.

Conclusion

This work presents an implementation set to develop or improve the prosthesis services. The goal is to ensure that prosthesis services are people-centered and responsive to the personal and environmental needs to ensure a healthy life and promote at all ages well-being. With these standards, any government can develop national policies, programs and plans for the highest quality prosthetic services. Then, the each person collaboration is not decreed, but is built on the common interest's merits and the desire to work together.

All leads contribute to a positive development. An investigation combination will help everyone finding or developing something new.

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Sliding mode with Adaptive model reference Controllers for glucose regulation

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Abstract

Diabetes is a chronic metabolic illness in which body's blood glucose regulatory system is with mal function appropriately. Generally, the patients with Type 1 diabetes (T1D) patient involve strict blood glucose control for the reason that they have a deficiency of insulin production. For this purpose an artificial pancreas is a closed-loop system used for maintaining normoglycemia. This research work considers the closed loop control algorithm based on the model reference adaptive control (CGT) applied for the glucose concentration in (T1D) subject. The Bergman model is presented for studying dynamical behavior of the glucose. In order to show the performance of the proposed design, it is compared to the super twisting sliding mode control (STSMC) performed during most recent searches. A comparative analysis of the adaptive CGT and STSMC is given in results section. The results in silico of numerical simulation are provided to show the advantages of the proposed controllers.

Keywords:

Adaptive model reference control; Sliding mode control; Glucose regulation; Diabetes; Insulinemia; Glycemia.

Introduction

The control of biologic systems is great interest, as the control of continuous insulin therapy for diabetes patients. Since these last dynamics are so-called externally complex systems of the glycemia and the insulinemia subsystems, in biomedical engineering an attractive number of papers have been published on this topic. The contribution of this study is twofold for regulating the glycemia of Type-1 Diabetes (T1D); firstly an adaptive control is designed based on the command generator tracker (CGT), this approach is considered to prove its feasibility on biological systems. Secondly, a further significant control with super twisting sliding mode method (STMC) is desired to achieve a clearer comparison among the two proposed controllers, therefore with this work the problem of blood glucose (BG) in diabetes is investigated. These controllers illustrate the challenges, also tested in silico for constructive diabetic I patients. Concrete simulation results have shown their efficient performance and the ability to regulate the blood glucose.

Material and Methods

1. The Bergman's model is applied in this work.
2. An adaptive control based on the principles of command generator tracker (CGT) is briefly presented, followed by the super twisting sliding mode control (STSMC).
3. The two controllers applied on the subsystems glycemia/insulinemia in presence of uncertainty and external disturbance.
4. The super-twisting control algorithm is used to control the systems with relative degree, " $r = 1$ ", in presence of bounded disturbances and uncertainties.
5. For the two controllers, the problem of the output-tracking is to stabilize the blood glucose level of the diabetic patient at the basal value. Hence, the tracking error is defined as the difference between the blood glucose level and its basal value in the blood of the diabetic patient.

Results

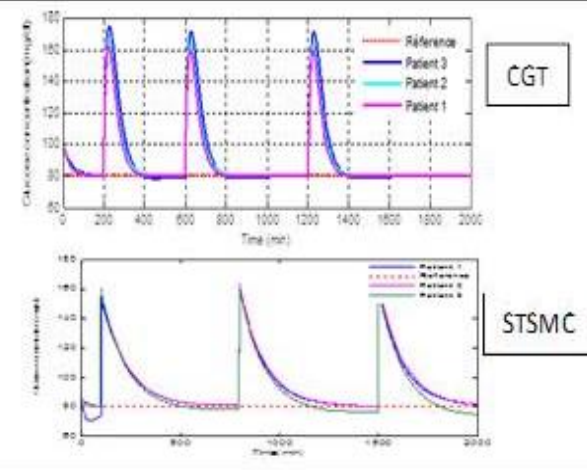


Figure1. The outputs of glucose (3 case) for a diabetic person for initial value $G_0=100$ (mg/dl) with perturbation and uncertainty for the two controllers CGT, STSMC.

Table1: Model parameters for patient 01.

Parameters	P1	P2	P3	Gb
Patient 01	0	0.2	5.3×10^{-3}	80

- Simulations are implanted for two controllers CGT and STSMC, and both cases, absence and existence of uncertainty and disturbance. The values of the model parameters that were used during the simulation implementation for patient 01 are given in Table1.
- Within the simulation, the response of glucose-insulin system output towards its reference.

Discussion

The simulation results show clearly that the super twisting controller is faster than the CGT; in general, we are more interested to the performances of the system in steady state, where we note that the use of the super twisting control provides a better tracking than the CGT for the two cases, in absence and existence of both uncertainty and disturbance. The simulation results are presented to show the effectiveness of the proposed controllers for the Bergman's model.

Conclusion

In this work, Bergmann's model is discussed. Then two controllers: adaptive model reference and super twisting sliding mode controllers were developed to the glucose-insulin system. The blood glucose concentration of a type 1 diabetic patient is stabilized at the preferred level in the presence of the external disturbances. The robustness of the two controllers has been established during three different parameters in patients.

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**ICHMST'24: International Congress on Health Sciences and Medical Technologies,
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Nasopharyngeal Neuroendocrine Carcinoma

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Abstract

Nasopharyngeal involvement of small-cell neuroendocrine carcinoma (SCNEC) is uncommon. To date, only about twenty cases have been described. This malignancy carries a very poor prognosis. We report the case of a 42-year-old male patient without history, who presented with a gradual nasal obstruction for 03 months, associated with confusion. Craniofacial MRI showed a large nasopharyngeal mass with endocranial extension and bilateral cervical lymph nodes. Nasal endoscopy enabled to visualize the mass located in the right nasopharynx and to perform a biopsy. Histopathology showed morphological evidence of small-cell carcinoma, whose neuroendocrine nature was confirmed by immunostaining: positive chromogranin A and CD56, with a high Ki67 index (80%). CT of thorax, abdomen and pelvis showed no distant metastasis. The tumor was therefore staged as cT4N2M0. The patient had received two cycles of induction chemotherapy using Cisplatin- Etoposide regimen, but his condition rapidly deteriorated due to disease progression, leading to death.

Keywords:

Small-cell neuroendocrine carcinoma, Nasopharynx, induction chemotherapy, prognosis.

Introduction

SCNEC usually occurs in the lungs. Extra-pulmonary localization is very rare, accounting for 0.1 to 0.4% of cancers and 2.5 to 4% of small cell carcinomas. Nasopharyngeal involvement is extremely rare, few a cases have been described in the literature. In addition to local symptoms, these tumors may cause flushing, wheezing, and episodic diarrhea secondary to the release of vasoactive substances. Histopathologically, these tumors are characterized by immunostaining for Synaptophysin (Syn), chromogranin (CgA) and neural cell adhesion molecule 56 (CD56). Prognosis remains poor, even in some cases where a response to chemotherapy has been reported.

Material and Methods

A 42-year-old male patient without history, who presented with a gradual nasal obstruction for 03 months, associated with confusion. Craniofacial magnetic resonance imaging (MRI) showed a large nasopharyngeal mass with endocranial extension and bilateral cervical lymph nodes. Nasal endoscopy enabled to visualize the mass located in the right nasopharynx and to perform a biopsy. Histopathology showed morphological evidence of small-cell carcinoma, whose neuroendocrine nature was confirmed by immunostaining: positive CgA and CD56, with a high Ki67 index (80%) (figure 1). Epstein-Barr Virus (EBV) serological antibody testing has not been done. In addition, CT of thorax, abdomen and pelvis showed no distant metastasis. The tumor was therefore staged as cT4N2M0. We started chemotherapy with Cisplatin plus Etoposide, the gold standard for the treatment of SCNEC.

Results

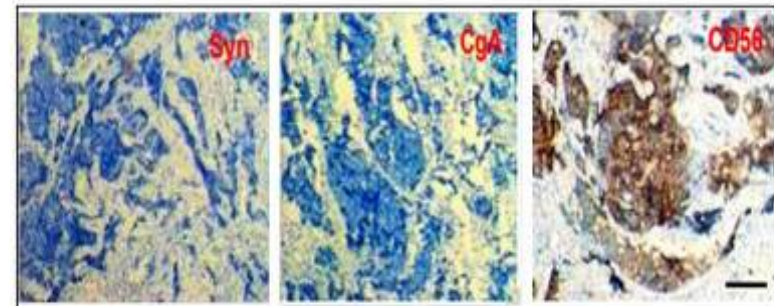


Figure 1.

The patient had received two cycles of induction chemotherapy using Cisplatin 25 mg/m², d1-d3, plus and Etoposide 100 mg/m², d1-d3. Unfortunately, his condition rapidly deteriorated due to disease progression, leading to death.

Discussion

Only a few cases of SCNEC occurring in the nasopharynx have been reported in English literature. Clinical features, in this case are similar to those of other nasopharyngeal tumors and are due to locoregional disease, also it can present with symptoms from distant metastases or with paraneoplastic syndromes. Because of clinical and radiological non-specificity, SCNEC of the nasopharynx is indistinguishable from other tumors, and diagnosis is essentially based on histological and immunohistochemical tests of the biopsy. The most useful neuroendocrine markers include CD56, CgA, and Syn. Because nasopharyngeal location is rare, initial management of patients with locoregional disease is based on that of undifferentiated carcinoma of the nasopharynx, combining radiotherapy and chemotherapy, but using Cisplatin plus Etoposide, the recommended chemotherapy regimen for SCNEC, although all data are derived from case reports and no randomized clinical trials have been conducted. The prognosis is poor despite chemotherapy use and is similar to that for patients with extensive small cell lung cancer, with a median survival of only 14 months.

Conclusion

Primary nasopharyngeal small cell neuroendocrine carcinoma is a very rare entity. No treatment guidelines exist at present. We need to study more cases in order to understand both clinical and therapeutic features of this disease.

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- 8

Epidemiological and Clinical Insights into Breast Cancer in Relizane

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3. Department of Biology, Djillali Liabes University, Sidi Bel Abbes, Algeria

Abstract

Background: Breast cancer is the most common cancer in women, surpassing colorectal and lung cancer. Tumor markers are protein substances or hormones produced by cancerous tissues, such as CA15-3 and ACE, which are specific tumor markers for breast cancer. Our study aimed to investigate the epidemiological, clinical, and therapeutic aspects of breast cancer in Relizane and evaluate the relevance of tumor markers in patient management.

Methods: We conducted a descriptive retrospective study on 470 breast cancer patients, aged between 22 and 90 years, registered at the Oncology Center of Relizane between January 1, 2019, and December 31, 2022.

Results: Our investigation revealed that breast cancer is steadily increasing, significantly affecting women (male-to-female ratio = 0.028), especially married women in rural areas. The most affected age group was between 40 and 49 years with an average age of 53.06 ± 14.8 years. Late menopause was a risk factor in our study, and half of our patients had a first or second-degree relative with a history of breast cancer. The predominant histological type was carcinoma, with equal involvement of the left and right breasts. Our population showed a predominance of stage I and II breast cancers and HER2+ molecular subtypes; however, only 11.5% of cases had developed metastases. Our study revealed a statistically highly significant relationship between metastasis development and elevated levels of tumor markers CA15-3 and ACE with $p=0.0001$. CA15-3 and ACE levels were high in patients who developed metastases, accounting for 89.19% and 32.96% of cases, respectively.

Conclusion: Tumor markers are a crucial tool for diagnosing a patient's condition, predicting and monitoring their response to certain treatments, and detecting cancer recurrence. This facilitates optimal management of breast cancer patients.

Keywords:

Breast cancer, Tumor markers, Epidemiological aspects, CA15-3, ACE.

Introduction

Breast cancer is the most common cancer in women, surpassing colorectal and lung cancer. Tumor markers are protein substances or hormones produced by cancerous tissues, such as CA15-3 and ACE, which are specific tumor markers for breast cancer. Our study aimed to investigate the epidemiological, clinical, and therapeutic aspects of breast cancer in Relizane and evaluate the relevance of tumor markers in patient management.

Material and Methods

This descriptive retrospective study involved 470 breast cancer patients, comprising 457 women and 13 men, aged between 22 and 90 years. The patients were registered at the Oncology Center of Relizane from January 1, 2019, to December 31, 2022. Data analysis was performed using SPSS software version 23.

Results

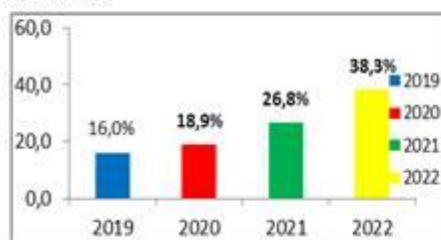


Figure 01: Distribution of cancer patients by year of diagnosis

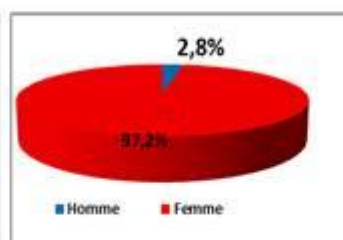


Figure 02: Graphical representation of breast cancer by gender

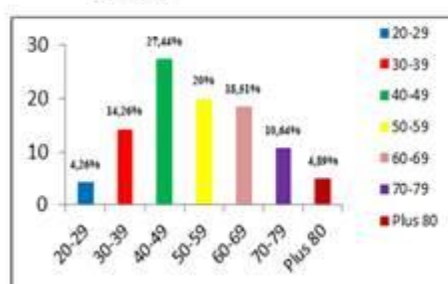


Figure 03: Distribution of patients by age

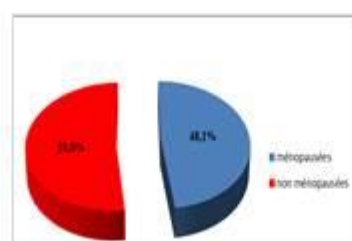


Figure 04: Distribution of female patients according to genital activity

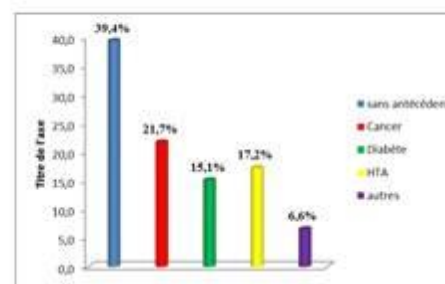


Figure 05: Distribution of female patients based on family history

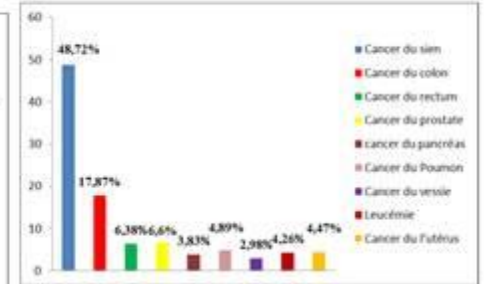


Figure 06: Distribution of female patients based on family history of cancer

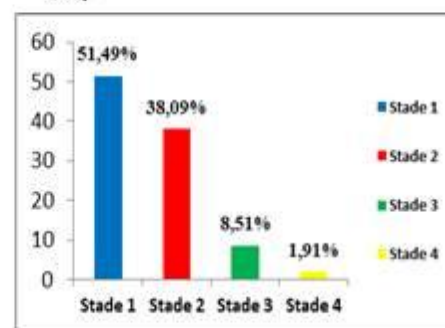


Figure 07: Distribution of patients by stage of breast cancer

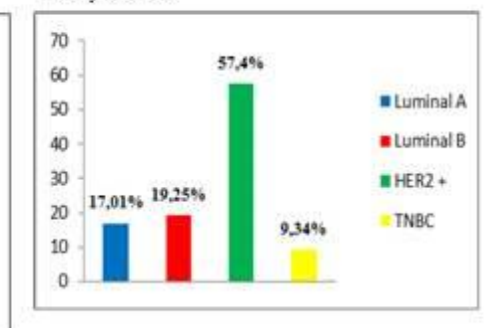


Figure 08: Distribution of patients by molecular subtype of breast cancer

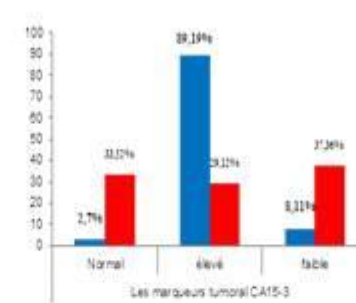


Figure 09: Distribution of female patients based on the development of metastasis and the CA15-3 tumor marker level

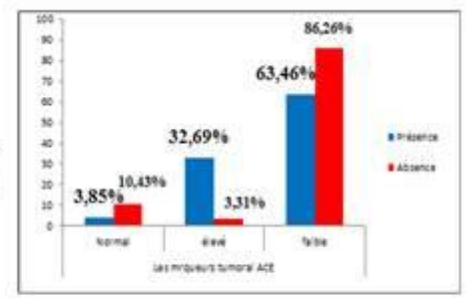


Figure 10: Distribution of female patients according to the development of metastasis and the ACE tumor marker

Discussion

Our analysis revealed a continuous increase in breast cancer cases over the study period (Figure 1). This disease predominantly affects women, with a male-to-female ratio of 0.028. Married women living in rural areas were particularly impacted (Figure 2). The most affected age group was between 40 and 49 years, with a mean age of 53.06 ± 14.8 years (Figure 3). Late menopause was identified as a risk factor, and half of the patients had a first- or second-degree relative with a history of breast cancer (Figures 4, 5, and 6). The predominant histological type was carcinoma, with equal involvement of the left and right breasts. The majority of cases were diagnosed at stages I and II, and HER2+ molecular subtypes were the most common. Only 11.5% of cases developed metastases (Figures 7 and 8). A highly significant relationship was observed between the development of metastases and elevated levels of tumor markers CA15-3 and ACE, with a p-value of 0.0001. High levels of CA15-3 and ACE were present in 89.19% and 32.96% of patients who developed metastases, respectively (Figures 9 and 10). These findings confirm that elevated tumor marker levels are indicators of tumor spread to lymph nodes or other organs such as the lungs and liver.

Conclusion

Tumor markers are essential for diagnosing a patient's condition, predicting and monitoring their response to specific treatments, and detecting cancer recurrence. This supports the effective management of breast cancer patients.

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Matrix metalloproteinase and oxidative stress in systemic lupus erythematosus

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Abstract:

Background: Systemic lupus erythematosus (SLE) is an autoimmune disease characterized by a chronic systemic inflammation and by a production of autoantibodies against nucleus components. Oxidative stress and matrix metalloproteinases (MMP) play a significant role in the immunopathology of SLE. The study aimed to analyze the activity of MMP-2 and MMP-9 in SLE patients and to study the implication of oxidative stress during RA by analyzing the production of nitric oxide (NO) and malondialdehyde (MDA).

Methods: The study included 30 SLE patients recruited from the Rheumatology department of Ben-Aknoun hospital in Algiers, during a period of 5 months (December-April 2023). The study included 50 healthy participants as a control group. The activity levels of MMP-2 and MMP-9 were measured in the plasma of patients and controls by zymography. Plasma titers of MDA and NO were determined with the use of the thiobarbituric acid reactive substances technique and the Griess method, respectively. Clinical and immunological data (disease activity score, visceral involvements, autoantibodies positivity) were collected from the patient's medical records.

Results: Our findings demonstrated a significant increase in the serum levels of MMP-9, NO and MDA in lupus patients compared to control ($p = 0.01$; $p < 10^{-3}$, respectively); however, no significant difference in MMP2 levels was found ($p > 0.05$). Our results demonstrated a remarkable increase in the plasma level of MMP-9 in patients with joint, skin and kidney involvement. Further, SLE patients with anti-RNP antibodies had higher serum concentrations of MMP-2 than anti-RNP negative patients ($p = 0.03$). A high disease activity score was linked to elevated MMP-9 levels. No association between MMP2/MMP-9 levels and the status of anti-double strand DNA was found.

Conclusion: This study suggests that oxidative stress markers (NO, MDA) and MMP-9 could be a useful inflammatory biomarkers for SLE progression and aggravation.

Keywords:

Systemic lupus erythematosus, malondialdehyde, matrix metalloproteinase-2, matrix metalloproteinase-9, nitric oxide, oxydative stress.

Introduction

SLE is an autoimmune disease, characterized by the production of autoantibodies and diffuse deposition of immune complexes, leading to inflammation and tissue damage.

Studies reported the association of deregulation of MMP activity to lupus pathogenesis. MMPs, a family of proteases, have the ability to degrade extracellular matrix and basement membrane components. An imbalance between MMPs and their endogenous inhibitors (TIMPs) can lead to tissue destruction in several autoinflammatory diseases¹.

Oxidative stress could be a central factor in the immunopathogenesis of SLE. Excessive production of reactive oxygen species (ROS) may be involved in the production of auto antigens and in the development of lupus autoimmune response.

In this work, we studied the expression and the activity of MMP2 and MMP9 at the plasma level in lupus patients. A study of the production of oxidative stress biomarkers (nitric oxide (NO) and malondialdehyde (MDA)) was carried out. In addition, we searched for the association between the production of MMPs and the clinical and immunological profile of the pathology.

Patients and methods

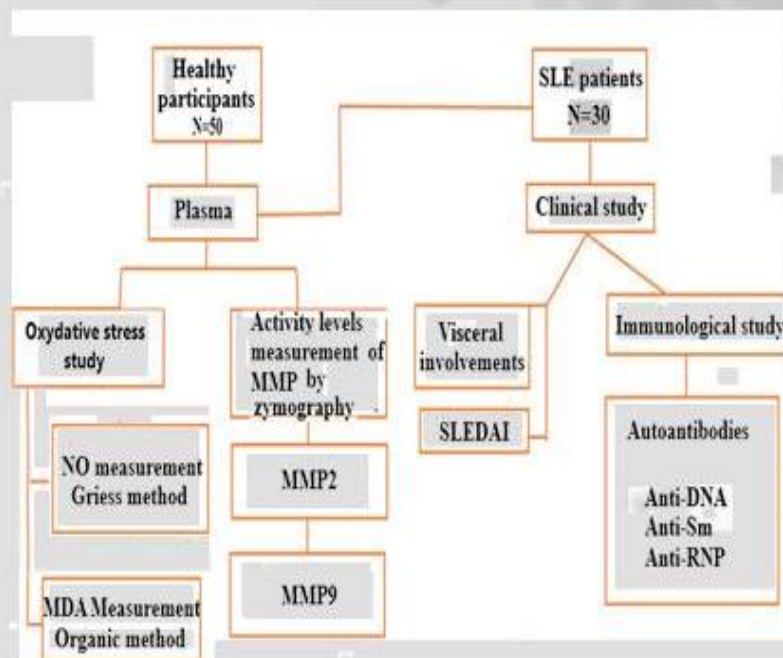


Figure 1: Experimental approach.

Results

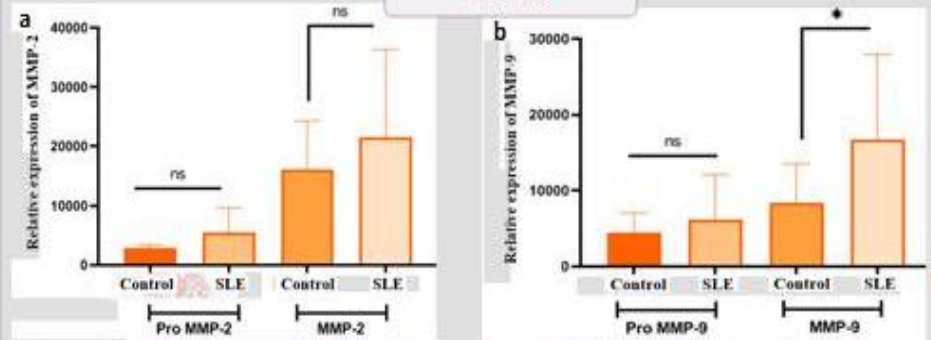


Figure 2: In vivo analysis in SLE patients and controls of MMPs on polyacrylamide gel copolymerized with gelatin.

a: Semi-quantitative analysis by imagJ of MMP-2 and its latent form Pro MMP-2. b: Semi-quantitative analysis of MMP-9 and its latent form Pro MMP-9.

Our results demonstrated that the expression of MMP-9 is higher in SLE patients in comparison to healthy subjects (16764 ± 11172 vs 8363 ± 5180 ; $p=0.01$). No significant difference in the relative expression of pro-MMP-9, MMP-2 and its latent form (pro-MMP-2) was found between the patients and the control group ($p=0.41$; $p=0.21$; $p=0.45$, respectively).

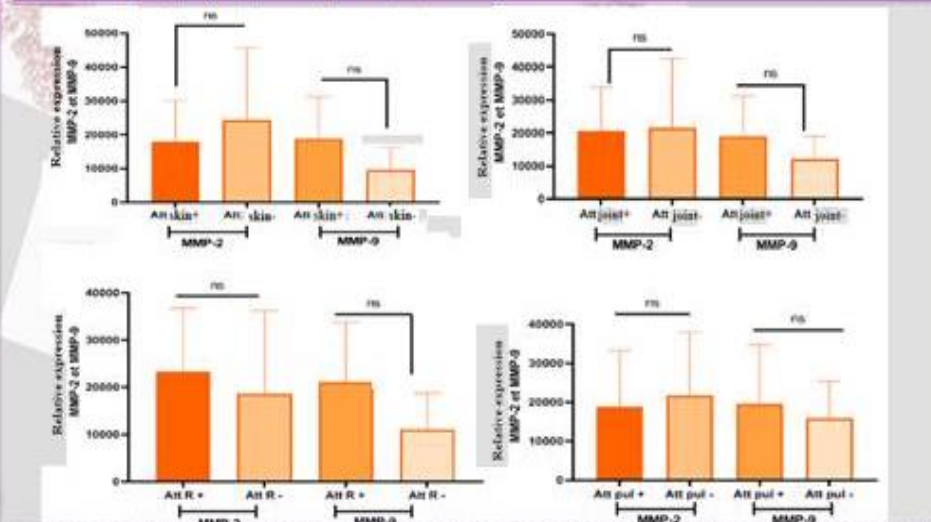


Figure 3: Analysis of the association of the presence of visceral damages and the expression of MMPs in SLE patients.

Our results showed a remarkable increase in the plasma level of MMP-9 in patients with skin, joint and renal impairments; however, the statistical analysis did not demonstrated a significant difference. An increase in the number of samples would be necessary to validate these findings.

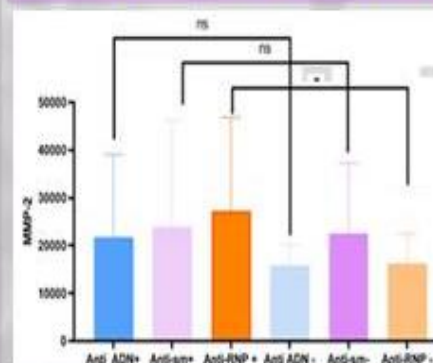


Figure 4: Study of the association of MMP-2 expression to the autoantibody profile in SLE patients.

Our results showed an increase in the plasma level of MMP-2 in patients with anti-RNP positive in comparison with patients anti-RNP negative ($27246 \pm 19615 \mu\text{M}$ vs $19883 \pm 12953 \mu\text{M}$; $p=0,034$).

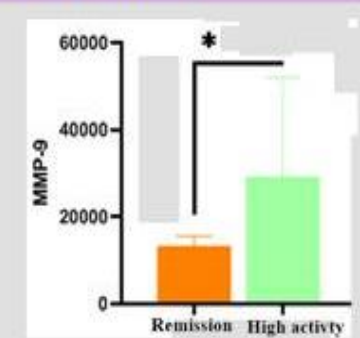


Figure 5: Study of the association of MMP-9 expression with the clinical activity score of SLE.

Our results showed an increase in the plasma level of MMP-9 in patients with a high clinical activity (SLEDAI>20) in comparison to patients in remission (SLEDAI=0) (29719 ± 12385 vs $13004 \pm 8476 \mu\text{M}$; $p=0,03$).

Discussion

Our results suggest that MMP9 could have an important role in the immunopathological mechanisms of SLE and not MMP2. Similarly, the team of Faber-Elmann *et al* reported that the activity of MMP-9 was significantly higher in the sera of lupus patients compared to healthy controls ($p = 0.03$)².

Our observations suggest the important role of NO and MDA during lupus. Probably MMP9 would be linked to greater severity of lupus by promoting the development of joint, skin and kidney damages.

Conclusion

Our results suggest that MMP-9 could be a useful inflammatory biomarker of progression and worsening of SLE. The realization this study on a larger number of patients would be necessary to better elucidate the role of MMP in lupus.

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Exploring the Link between mineral status, metabolic and cardiovascular parameters in patients suffering from type 2 diabetes

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Abstract

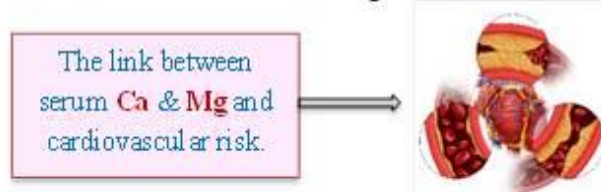
The study aimed to investigate the link between serum calcium and magnesium levels and lipid profiles in patients with T2D in northwestern Algeria. This study included 116 T2D patients from Larbi BEN-MHIDI diabetic center of Sidi Bel Abbes. Blood samples were collected in the morning, the sufferers were fasting in order to measure their serum calcium, magnesium, and lipid. In the study, a higher calcium ranges have been linked to elevated LDL cholesterol, while better magnesium stages have been linked to decrease total ldl cholesterol and triglycerides. An imbalanced calcium/magnesium ratio contributed to dyslipidemia, especially elevated triglycerides. These findings highlight the significance of thinking about mineral popularity inside the complete management of T2DM to improve metabolic results and decrease cardiovascular risk.

Keywords:

Type 2 diabetes, Magnesium, Calcium, Cardiovascular risk.

Introduction

-Diabetes is considered as the utmost public health concern; this pathology has substantial human and socio-economic reverberations.¹
-Dyslipidemia is considered as one of the major risk factors in the development of atherosclerosis, with chronic accumulation of lipid rich plaque in arteries.²
-Minerals such as zinc, potassium (K), calcium (Ca), and magnesium (Mg) are known to be essential for the control of glucose metabolism.



Material and Methods

- The cross-sectional study included 116 diabetes patients aged between 41-90 years old
- The inclusion criteria for the study were as follows: (1) Subjects with T2D, (2) Be 40 years of age or older, (3) Be willing to participate in the study. Exclusion criteria included: (1) Individuals with other types of diabetes
- The sufferers were fasting and their blood samples were amassed within the morning
- Regarding the serum calcium and magnesium levels, they had been measured via an automatic biochemistry analyzer Selectra Pro M, as well as total cholesterol, triglycerides, LDL-c and HDL-c, were accomplished by enzymatic colorimetric methods
- Participants were classified into four quartiles according to their Ca, Mg and Ca/Mg ratio levels.
- Statistical analysis was performed using SPSS software version 27.0 (IBM Corp., Armonk, NY, USA, 2020). Differences between quartiles were analyzed by ANOVA, and linear regressions were performed to assess the association between mineral variables, metabolic and cardiovascular parameters.
- Anthropometrics measurements and questionnaires were also performed.

Results

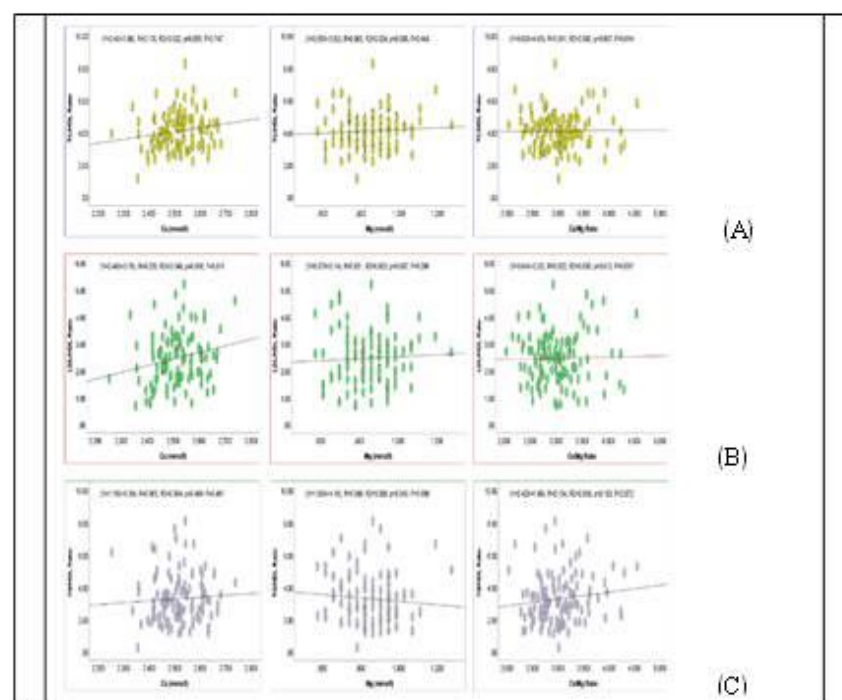


Figure1. Residual plots of the linear regression between lipid ratios (A) TC/HDL, (B) LDL/HDL, (C) TG/HDL and serum mineral levels.

Figure 1 (A) shows the TC/HDL ratio and its relationships with Ca (A1), Mg

(A2) and Ca/Mg ratio (A3), respectively. Figure 1 (B) displays the LDL/HDL ratio and its relationships with Ca (B1), Mg (B2) and Ca/Mg ratio (B3), respectively; and finally, figure 1 (C) shows the TG/HDL ratio and its associations with Ca (C1), Mg (C2) and Ca/Mg ratio (C3).

Discussion

The outcomes of our study indicate that women are the most present in the study (91 women vs. 25 men), with a mean age of 67.41 ± 10.12 years (between 41 and 90 years). The residual plots revealed that higher calcium levels were associated with increased TC/HDL ($r^2 = 0.032$, $p = 0.055$) and LDL/HDL ($r^2 = 0.048$, $p = 0.018$) ratios. While, lower magnesium levels were significantly associated with higher TG/HDL ratio ($r^2 = 0.008$, $p = 0.343$). As well as the curves for Ca/Mg ratio suggests a potential linear relationship for TG/HDL, similar to that observed with calcium levels alone. This highlights the importance of considering the balance between calcium and magnesium to influence metabolic lipid and cardiovascular risk, suggesting that optimal Ca and Mg levels may be important for the management of T2DM. These observations are in line with the findings of previous studies that have shown a link between Ca and Mg levels and cardiovascular risk.

Conclusion

It is well established that minerals play an essential role in our body and in many important metabolic processes. The study suggests that Ca, Mg levels and the Ca/Mg ratio may be important factors to consider in the management of T2DM as well as further research is needed to clarify the role of mineral status in the pathogenesis of T2DM and associated cardiovascular complications.

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Inflammation-related biomarkers as predictors of treatment response in advanced colorectal cancer

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Abstract

Metastatic colorectal cancer (mCRC) is one of the most lethal cancers [1]. Resistance to therapies presents a major clinical challenge. Oxidative stress and inflammation, mainly contribute to treatment resistance and tumor cell survival. This study aimed to evaluate post-chemotherapy oxidative stress and inflammatory biomarkers in mCRC patients and their correlation with treatment response. In our study, 30 patients undergoing chemotherapy with bevacizumab, capecitabine and oxaliplatin (BCapOx) were recruited. Oxidative stress markers were quantified. Pro-inflammatory and anti-inflammatory cytokines were also analyzed. Our study reported that responders had significantly higher levels of GSH, IL-10, and TGF- β ($P < 0.05$, $P < 0.05$, $P < 0.01$, respectively), while non-responders had elevated levels of MPO, H_2O_2 , EPO, and TNF- α ($P < 0.01$). These results highlight a pronounced oxidative and inflammatory profile in non-responders. Oxidative stress and inflammatory biomarkers are potential predictors of therapeutic response in metastatic colorectal cancer.

Keywords:

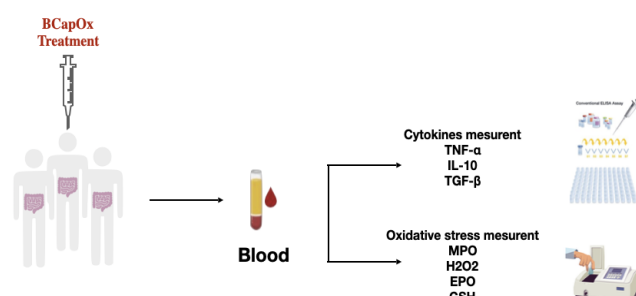
colorectal Cancer, oxidative stress, inflammatory biomarkers, treatment response, chemotherapy.

Introduction

Metastatic colorectal cancer (mCRC) remains one of the leading causes of cancer-related deaths, with treatment resistance. Chemotherapy and targeted therapies, while standard, are often undermined by tumor adaptation mechanisms driven by oxidative stress and inflammation. Accumulation of reactive oxygen species (ROS) and pro-inflammatory cytokine play critical roles in fostering tumor cell survival and evasion of apoptosis, thereby diminishing the efficacy of anticancer treatments highlight the importance of identifying predictive biomarkers to improve therapeutic strategies and patient management. This study focuses on evaluating the correlation between post-chemotherapy oxidative stress and inflammatory biomarkers with treatment response in mCRC patients

Material and Methods

35 mCRC patients were recruited from the Oncology Department of Rouiba University Hospital. All patients received a standard chemotherapy regimen consisting of bevacizumab, capecitabine, and oxaliplatin (BCapOx)



Results

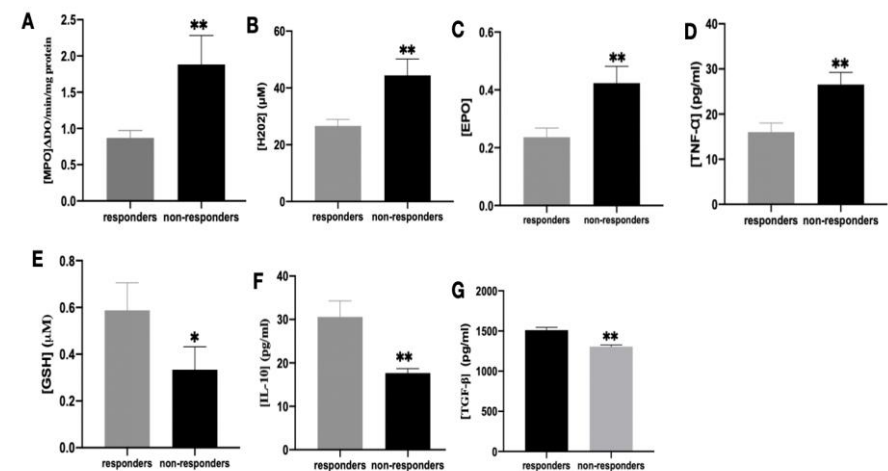


Figure 1 : The oxidative stress markers levels in the responder group and non-responder colorectal cancer patients. (A) MPO, (B) H_2O_2 , (C) EPO, (D)TNF- α , (E) GSH, (F) IL-10, (G) TGF- β ; values as mean $\pm$ SD are presented. * $p < 0.05$, ** $p < 0.01$.

Discussion

This study reveals a mechanistic interplay between oxidative stress and inflammation in shaping therapeutic outcomes in metastatic colorectal cancer. Responders exhibited higher levels of antioxidants (GSH, IL-10, TGF- β), suggesting enhanced ROS neutralization and anti-inflammatory signaling that supports apoptosis. Non-responders, however, showed elevated MPO, H_2O_2 , EPO, and TNF- α , indicative of heightened oxidative stress and a pro-inflammatory microenvironment promoting tumor cell survival and chemoresistance. These findings propose a mechanistic framework where the balance between oxidative damage and inflammatory regulation critically influences chemotherapy effectiveness.

Conclusion

These findings underscore the potential of oxidative stress and inflammatory biomarkers as predictors of therapeutic response in metastatic colorectal cancer, particularly for assessing the risk of resistance to antitumor drugs.

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Innovative techniques for avulsion surgery of impacted wisdom teeth and microsurgery

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Abstract

Background :

Wisdom tooth avulsion is a surgical procedure that is part of a dentist's daily routine. Some surgeries are more complex, notably for impacted mandibular wisdom teeth. They require a more extensive osteotomy and present major surgical risks. Today, surgery is evolving towards more minimalist procedures, known as minimally invasive surgery. It plays a very important role in the medical field, and especially in oral surgery. What's more, this surgery is made possible by more specialized equipment.

Objective: The purpose of this work is to describe and clarify the advantages and efficacy of the minimally invasive approach to avulsion of impacted mandibular wisdom teeth.

Material and Methods : We report the case of avulsion of a minimally impacted mandibular wisdom tooth and a review of the literature using databases such as: Pub Med, science direct

Results: The minimally invasive approach is recommended in current surgical practice. This procedure enables safe, controlled surgery with minimal incisions, minimal flap elevation and gentle manipulation of both hard and soft tissues.

Microsurgery achieves primary wound closure by perfectly approximating the edges during suturing, reduces pain and post-operative clinical parameters (edema, trismus, bleeding).

Conclusion: Minimally invasive surgery is currently a breakthrough in modern dentistry.

Keywords:

modern minimally invasive dentistry, microsurgery, wisdom tooth

Introduction

Minimally invasive oral surgery is a term that describes the application of a highly precise and delicate surgical procedure that aims to reduce both immediate and long-term complications while performing the same surgical procedures. These technological and technical developments mean that, both medically and ethically, the only relevant and appropriate therapeutic model is one based above all on tissue preservation and minimally invasive treatments. This model is known as modern minimally invasive dentistry.

Material and Methods

In this work, we are interested in minimally invasive oral surgery and innovative techniques.

We report the case of avulsion of a minimally impacted mandibular wisdom tooth and a review of the literature using databases such as: Pub Med, science direct

Results



Figure1. The steps involved in minimally invasive extraction of a mandibular wisdom tooth
Oral Pathology and Surgery Service Dr. ABDELLAOUI Ch

Microsurgery finds its application in soft-tissue management, insofar as healing is rapid thanks to primary site closure.

It enables the initial tissue architecture to be maintained, with fine incisions, small flaps are used, preserving as much soft tissue as possible.

Thus, sutures should be performed with needles of smaller diameter and length to cause less trauma, and with monofilament sutures. Minimally invasive surgery is particularly useful for manipulating hard tissue with selective osteotomies.

The use of piezosurgery in the extraction of impacted mandibular wisdom teeth is recommended in current surgical practice. This method enables efficient, precise and safe osseous surgical cuts, and is selective and non-traumatic in view of the proximity of key anatomical elements (inferior alveolar nerve, lingual nerve).

Discussion

Minimally invasive oral surgery is currently seen as an approach that practitioners should be moving towards.

Applying a microsurgical strategy to a minimally invasive treatment concept has many advantages: it not only limits surgical trauma and reduces healing time, but also increases the reliability, reproducibility and aesthetics of the procedure.

Such approaches require mastery of the therapeutic chain and the use of very specific equipment.

Conclusion

Avulsion of the impacted mandibular wisdom tooth is an oral surgery commonly performed with the conventional extraction technique.

Minimally invasive surgery is currently a breakthrough in modern dentistry, but its requirements still have to be met in terms of both people and equipment.

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CLINICAL INVESTIGATION INTO WEST NILE VIRUS IN THE REGION OF M'SILA;ALGERIA

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Abstract

West Nile virus (WNV) is an arbovirus belonging to the Flaviviridae family, genus Flavivirus (Kramer et al., 2007). The most affected arbovirus in the world, its natural cycle involves birds which constitute the reservoir and ornithophilous mosquitoes, mainly of the *Culex* genus, as vector. Contamination of humans and horses occurs accidentally.

This present investigation allowed us to have a vague overview of the real situation of the West Nile virus in the M'sila region, and to understand the dynamics and mechanisms leading to the development of neurological symptoms in cases. The comparison of asymptomatic and symptomatic individuals and the use of data available for other Flaviviruses have improved our knowledge and give hope for the development of currently absent therapeutic solutions and prophylactic measures.

Keywords

West Nile virus, investigation, Msila, symptoms

Introduction

le virus West Nile (VWN) est un arbovirus appartenant à la famille des *Flaviviridae* genre *Flavivirus* (Kramer et al., 2007). En Algérie, le virus a été isolé pour la première fois en 1968 à l'institut pasteur d'Alger, à partir d'un broyat de vecteurs constituée d'un pool de 215 moustiques de genre *Culex* prélevé dans la région de Djanet, localité située à l'extrême sud est de l'Algérie dans le cadre d'une enquête sur l'épidémie de la peste équine survenue en Algérie en 1965. Depuis, toutes les tentatives d'isolement du virus n'ont pas abouti, que se soit à partir des êtres humains où à partir des animaux. En revanche, plusieurs enquêtes menues chez l'homme et chez les animaux ont révélé des cas positifs (Metallaoui, 2008). Cependant, dans notre pays, les derniers résultats officiels remontent aux 1994, enquête prévue dans le cadre du projet GCP/RAB/002, ce qui met un point d'interrogation sur la situation actuelle de la maladie dans notre pays, ajoutant à ça l'absence de système de surveillance spécifique à cette maladie, contrairement à nos voisins la Tunisie et le Maroc (Tigrine et Messaoudene, 2017)

Material and Methods

Les enquêtes clinique réalisé sur les cas infectés et suspects par le VWN ont été réalisé durant les mois de mars 2024 à l'aide d'une fiche questionnaire, ces enquêtes nous ont permis de dresser une liste des malades de la région de M'sila et les autres communes, L'outil de notre enquête est un formulaire constitue de six parties, la première est basée sur la personne enquêtée, la deuxième partie collecte des renseignements concernant histoire clinique des cas.

En ce qui concerne les résultats obtenus pour cette enquête clinique, nous avons calculé selon le logiciel R version 4.2.2.

Conclusion

Cette présente enquête nous a permis détecté que notre échantillon est équilibré avec un SEX-RATIO=1/1, les personnes âgées de 1 à 10 ans sont les plus touchées avec le virus avec un pourcentage (44,83%), la population étudiées indique une forte signe symptomatiques avec des signe de gravité 80% pour l'altération conscience, convulsion coma et raideur de la nuque.

Results

Distribution de la variable diagnostic de VWN selon le sexe

La distribution du sexe en fonction du diagnostic positif WEST NIL est presque équilibrer avec un taux respectif : 52.4% et 47.6% male et féminin (Tab 1.).

Distribution de la variable diagnostic de VWN selon Classe d'âge

On remarque selon le graphe ainsi que le tableau, que le West Nil, a été confirmé uniquement chez 67% d'enfant hospitalier contre 100 % pour les autres. (Tab 2.)

Table 1: Distribution de la variable diagnostic /sexe

Sexe	Positive	Negative
Male	73%	27%
Feminin	71%	29%

Tableau 4. Distribution de la variable diagnostic /Classe d'âge

Classe d'âge	Negative	Positive
<15	33%	67%
15-30	0%	100%
30-45	0%	0%
45-60	0%	100%
>60	0%	100%

Histoire clinique des malades

Selon l'histoire clinique des patients qui présenté dans la figure 1, on remarque que presque les 2/3 (68,97%) de nos patients sont cliniquement manifestants / au cas de West Nil (20%) qui sont asymptomatique (Fig.01).

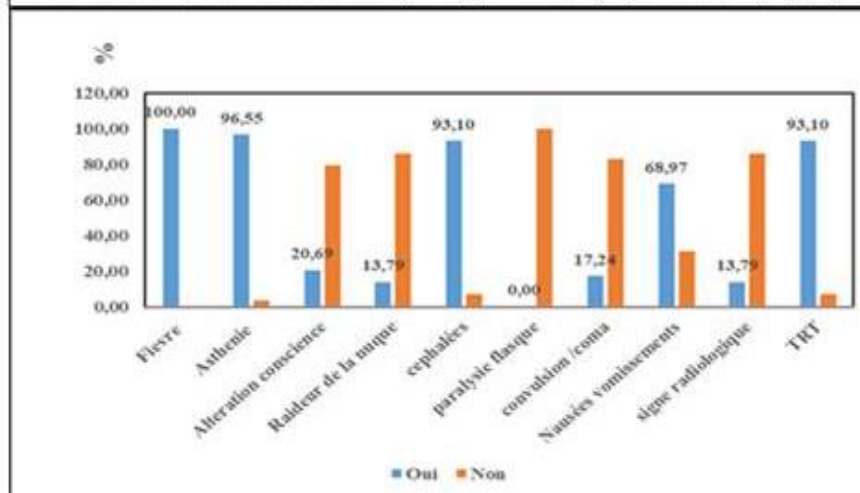


Figure 1. Histoire clinique des malades.

Discussion

Le résultat global de sérologie indique que 72,4% des sujets testés sont positifs au VWN, cette séropositivité est équilibrée dans les deux sexes, ce qui suggère une forte prévalence endémique. Ce taux peut être expliqué par le caractère endémique du virus dans la région d'étude. Il tire son nom du district de West Nile, en Ouganda, où il a été isolé pour la première fois en 1937 chez une femme souffrant d'une forte fièvre. Il a ensuite été détecté chez des hommes, des oiseaux et des moustiques en Egypte au début des années 50, et a depuis été retrouvé chez l'homme ou l'animal dans de nombreux pays (Inserm, 2020). Les résultats montrent aussi que les 2/3 (68,97%) de nos patients sont cliniquement manifestants au cas de West Nil (20%) qui sont asymptomatiques.

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Study of the Clinical-Biological Characteristics of Psoriasis in the Region of Sidi Bel Abbas

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Abstract

Psoriasis is a multifactorial erythematous-squamous dermatosis, with an unknown etiology and a chronic progression. This condition affects 125 million people worldwide, including one million in Algeria. This study aims to describe the clinical and biological characteristics of psoriasis in the region of Sidi Bel Abbas.

Keywords:

Psoriasis, clinical description.

Introduction

Psoriasis is a chronic proliferative and inflammatory condition of the skin. It is characterized by erythematous plaques covered with silvery scales, particularly over the extensor surfaces, scalp, and lumbosacral region. Psoriasis occurs worldwide, and even if its prevalence varies it can occur at any age.

The therapeutic strategy depends on the clinical type, the degree of severity and the extracutaneous factors involved local treatments. Phototherapy and systemic treatments are preconized for more severe forms.

Material and Methods

Seventy-nine patients with psoriasis were included in this retrospective study conducted at the dermatology department of the "Hassani AEK" university hospital in the region of Sidi Bel Abbas The files were studied using a data processing form which included the following information: age, sex, form of psoriasis, treatment...

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Results

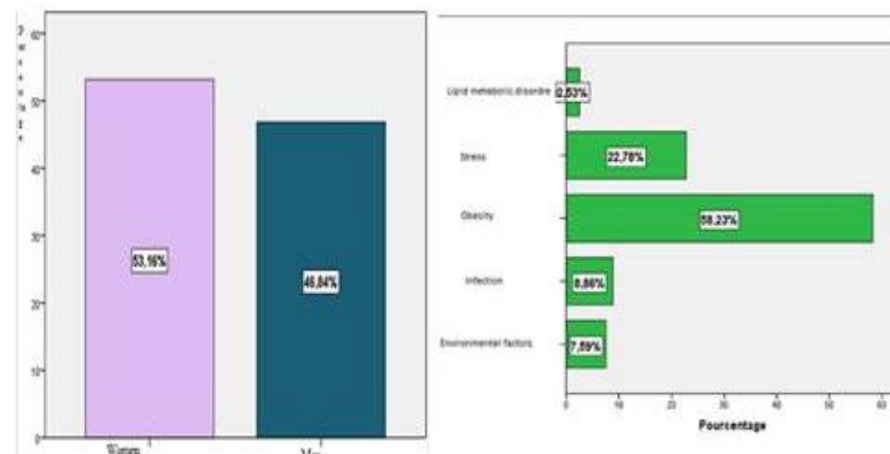


Figure 1:

Distribution of psoriatic patients by gender

Figure 2:

Different factors triggering psoriasis

Table 1: Several types of psoriasis in our population

Types of Psoriasis				
	Frequence	percentage %	valid percentage %	cumulative percentage %
Scalp psoriasis	8	10,1	10,1	10,1
Nail psoriasis	6	7,6	7,6	30,4
Flexural psoriasis	8	10,1	10,1	27,8
Guttate psoriasis	23	29,1	29,1	57,0
Psoriasis vulgaris	26	32,9	32,9	89,9
pustular psoriasis	2	2,5	2,5	92,4
On the face	6	7,6	7,6	100,0
Total	79	100,0	100,0	

Discussion

The incidence, prevalence, and manifestation of psoriasis are similar between different sexes. Our results show a predominance of women (53.16%) with a sex ratio (M/F) of 0.8. These results are similar to those found by (Tarmoul et Tabbou 2021).

Metabolic syndrome is the most frequent comorbidity in psoriasis, MetS in turn leads to obesity, which creates a proinflammatory state in the body eventually exacerbating psoriasis (Froeliger et martin, 2009).

Furthermore; other factors are known to trigger psoriasis include smoking, alcohol consumption, body mass index (BMI), trauma and drugs (Thorvardur *et al.*, 2011). These constataions are so close to our findings.

Conclusion

Psoriasis is a lifelong immune-mediated inflammatory skin disease, associated with morbidities such as psoriatic arthropathy, psychological, cardiovascular and more. It is characterized by the formation of sharply demarcated, scaly, erythematous plaques. Although the etiology is not fully understood, genetic and environmental factors have been implicated. Careful monitoring of psoriasis patients, both clinically and biologically, is essential given our limited knowledge of the long-term safety of treatments.

Evaluation of biochemical, nutritional and inflammatory parameters in patients with polycystic ovary syndrome in the Wilaya of Sidi Bel Abbes

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Abstract

Background: Polycystic ovary syndrome (PCOS) is an invasive endocrine disorder of unknown origin that requires immediate medical and dietary intervention due to its adverse effects on metabolism and reproduction [1]. The study aimed to identify the biochemical and nutritional profile of patients suffering from PCOS and evaluate the association of metabolic imbalance associated with PCOS while studying the nutritional status of patients treated in the EHS-SBA maternity hospital.

Methods: This was a retrospective study (from January 2020 to April 2024) conducted by analyzing medical records and conducting a nutritional survey over 2 months (March 20 to May 20, 2024).

Results: Our study included 65 cases of patients with PCOS. The mean age was 38.63 ± 10.40 years, the most affected age group was 30 to 39 years. Our results showed that most patients had irregular menstrual cycles (57.38%). Our patients presented with hypertension (18.46%), type 2 diabetes (24.62%), goiter (12.31%), and anemia (7.69%). The mean CRP level was high in obese cases (34.22 ± 15.43 mg/L) compared to non-obese cases (15.71 ± 4.95 IU/L). The TGO rate was high in obese cases (48.45 ± 10.25 IU/L) compared to non-obese cases (25.66 ± 9.60 IU/L). Similarly, for the TGP rate (obese cases: 46.94 ± 16.94 IU/L vs non-obese cases; 22.39 ± 10.84 IU/L, $p=0.030$). The cholesterol level was statistically ($p=0.024$) higher in obese cases (2.55 ± 0.50 g/l) compared to non-obese cases (1.92 ± 0.24 g/l). In addition, the blood urea level was higher in obese cases (0.48 ± 0.12 g/l) compared to non-obese cases (0.27 ± 0.08 g/l). The mean blood glucose level was significantly higher in obese (1.76 ± 0.21 g/L) vs. non-obese cases (0.97 ± 0.28 g/L). Similarly, the triglyceride level was higher in obese cases (1.64 ± 0.95 g/L) compared to non-obese cases (1.56 ± 1.16 g/L). Interestingly, the blood creatinine level was higher in obese cases (12.67 ± 4.73 g/L), compared to non-obese cases (5.97 ± 0.28 g/L).

Conclusion: These biochemical dysfunctions involve problems related to carbohydrate, hepatic, and renal metabolisms, which worsens the prognosis in patients suffering from PCOS.

Keywords:

Polycystic ovarian syndrome (PCOS), nutritional profile, metabolic imbalance.

Introduction

Polycystic ovary syndrome or PCOS is also called ovarian dystrophy. It is described as the presence of multiple follicles developing around and in the ovary. These cysts are follicles that refuse to develop in the last stage of the follicular phase. However, this is only part of PCOS, a syndrome that can be present differently in women in more or less complete forms, with many consequences on women's health. In its total form, PCOS causes the absence of ovulation, which means that there is no ovulation. Women affected by PCOS have 50% primary infertility and 25% secondary infertility (Patel, 2018). The study aimed to identify the biochemical and nutritional profile of patients suffering from PCOS and evaluate the association of metabolic imbalance associated with PCOS while studying the nutritional status of patients treated in the EHS-SBA maternity hospital.

Material and Methods

This was a retrospective study (from January 2020 to April 2024) conducted by analyzing medical records and conducting a nutritional survey over 2 months (March 20 to May 20, 2024).

Results

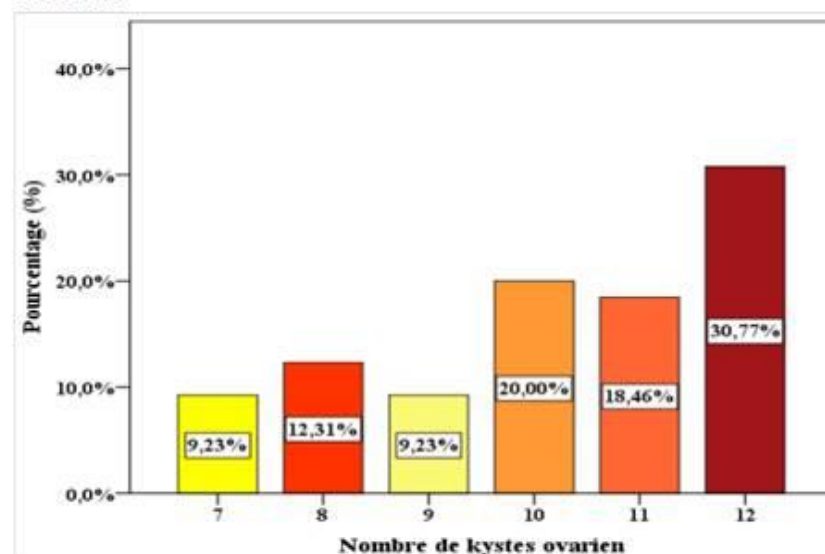


Figure 1. Distribution of patients according to the number of cysts

Table 1: Distribution of patients according to the ultrasound appearance of the ovaries

Ultrasound aspect	Obese (n=42)	Obese (n=23)	P*
	Mean $\pm$ SD	Mean $\pm$ SD	
Lower diameter (mm)	9,32 $\pm$ 2,62	7,37 $\pm$ 2,77	0,007
Ovarian volume (cm ³)	10,81 $\pm$ 2,45	10,58 $\pm$ 2,43	0,725

(*) Significantly different at $p \leq 0.05$ for Student's t test. SD: Standard deviation. Distribution of patients according to the number of cysts detected by ultrasound, our results are as follows: patients with 12 cysts (30.77%), with 7 and 9 cysts (9.23%), with 8 cysts (12.31%), with 10 cysts (20%), and with 11 cysts (18.46%) (Figure 1). In our studied sample, the ultrasound appearance revealed that the mean ovarian volume in obese patients was 10.81 ± 2.45 cm³, compared to that of 10.58 ± 2.43 cm³ in non-obese patients (Table 1).

Discussion

Serous and mucinous cysts arising from the epithelial lining of the ovary are the most common, while endometriomas are often associated with pelvic endometriosis, as are dermoid cysts arising from the germinal cells of the ovary (Raiga et al., 2006). An ovarian cyst is a manifestation and/or cause of the absence of ovulation (Hanzen et al., 2007). Most patients recruited in this study have a polycystic ovary with more than 12 follicles of 2 to 9 mm in size on at least one ovary on ultrasound. However, it is indeed possible to have PCOS without the presence of a polycystic ovary on ultrasound, and vice versa; their presence does not indicate the diagnosis (Hugues, 2011).

Conclusion

Knowing the disease, its symptoms, and the complications that arise from it is essential for the doctor to propose the most effective solutions, and to refer the patient to an appropriate health or care professional.

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Analytical control of cancer drugs in Algerian pharmaceutical industry

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Abstract

This work is a study of the means of control of cancer therapeutic products as listed in the most used pharmacopoeias in Algeria: the United States pharmacopeia and European pharmacopeia. For each product listed for this study a search for its monograph was done to classify them on drugs that can be analyzed with the specification of the American pharmacopeia or European pharmacopeia and those whom ought to be controlled according to their manufacturer control file or other pharmacopoeias. For those, which have their monograph an evaluation of the methods have been done to establish the most used methods and the frequency of each method also to spot on the differences between each group of products.

The following analytical methods were found: chromatography, spectroscopy and chemical reactions with different frequencies. We can see that the liquid chromatography has a fair share of application for the dosage, the identification, the search for impurities and other specific tests.

The interpretation of the results also shows that the monoclonal products do not have their own monographs, even though they are very important therapeutic products,

In tune with the pharmacopoeias are rapidly adapting with the introduction of new, fit-for-purpose technologies and modalities while expanding its scope of covered active substance monographs and pharmaceutical drug products

Keywords : Pharmacy, cancer drugs, control, efficiency,

Introduction

For the synthesis of cancer drugs the pharmaceutical industry has used different technologies in addition to chemical synthesis, such as amplification, fermentation technique, recombinant DNA technique and hybridation technique to obtain new promising active agents. So the question arises; how can we ensure the safety and efficacy of these drugs ?

Material and method

As references the USP 46 and the 11 edition of the European Pharmacopeia have been used. The drugs have been chosen according to the criteria of been include in the Algerian nomenclature of medical products of February 2023. For each INN listed for this study a search for its monograph, was done to classify them as drugs that can be analyze with the specification of a pharmacopeia or by other references

Results

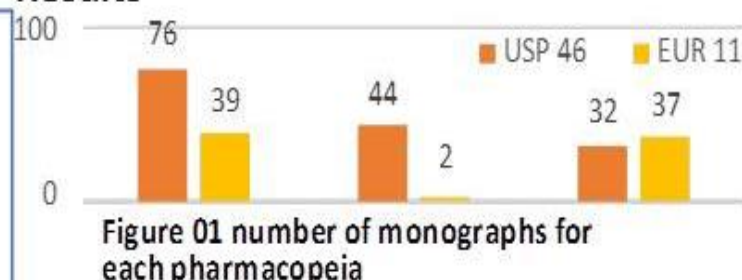


Figure 01 number of monographs for each pharmacopeia

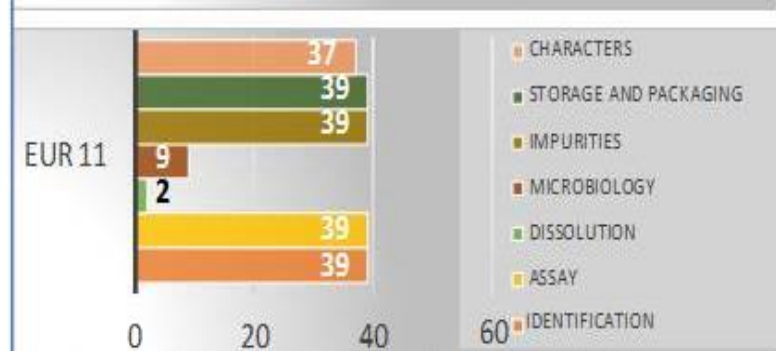


Figure 02: frequency of sections in both pharmacopoeias

Discussion

We can see that the liquid chromatography has a fair share of application for the dosage, the identification, the search for impurities and other specific tests.

Comparing the two pharmacopoeias, we find similarities between their monographs such as certain specifications in common but we also find differences that make their simultaneous use a better option for quality control,

There is no monograph of monoclonal cancer drug product; so to maintain the relevance and usefulness of the pharmacopoeias, a constant update of the drugs monographs is required

Conclusion:

with the fast-paced technological developments and novel challenges, pharmacopoeias are rapidly adapting by the introduction of new, fit-for-purpose technologies and modalities while expanding its scope of covered actives substances and pharmaceutical drug products

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Study of the Clinical and evolutionary profile of pregnant women with severe preeclampsia

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ABSTRACT: Preeclampsia is a pregnancy complication occurring in the third trimester of pregnancy and specific to human gestation. Our study aims to determine the frequency of preeclampsia in the wilaya of Sidi Bel Abbes at the level of the high-risk pregnancy unit of the gynecology-obstetrics department, and to determine the risk factors.

a retrospective epidemiological study carried out between 2021 and 2023 on a series of 109 pregnant women aged 17 to over 40 years. Our survey has highlighted the different risk factors for eclampsia ie: age, medical history, family. Better understanding of his disorders could improve the prognosis and management of mother and child.

Keywords:

Pregnancy, pré-eclampsia, history, hypertension

Introduction: Pregnancy is an important phenomenon in the lives of many women and men around the world. However, it can sometimes be complicated by one of the problems spectrum of major obstetrical syndromes, pregnancy complications linked to placental placental dysfunction, including pregnancy-related hypertensive disorders. These represent a frequent medical problem during pregnancy. They include the complications of chronic hypertension, gravid hypertension, pre-eclampsia and eclampsia. .

Materiel and Methods : This is a retrospective epidemiological study carried out between 2021 and 2023 at the hospital specialized in gynecology and obstetrics (High risk pregnancy unit). The diagnosis of preeclampsia was made in pregnant women who met the following criteria :
BPS $\geq$ 140mmhg and/Or BPD $\geq$ 90mmhg.
Proteinuria $\geq$ 2+ on dipstick.
Gestational age >20WA .

Results:

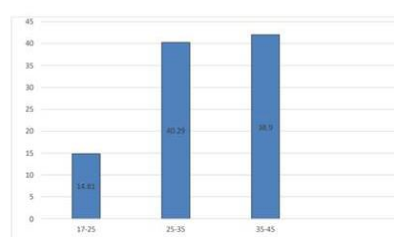
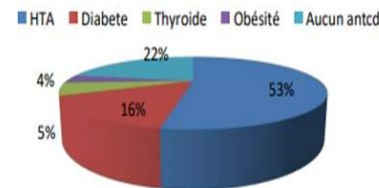


Figure 01: Patients distribution by age group



Les antécédents

Figure 02: Distribution of patients by medical history

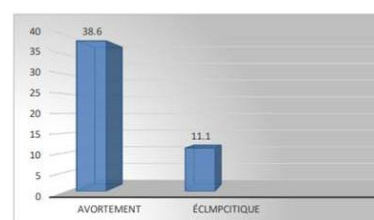


Figure 03: Distribution of patients according to obstetrical and gynecological history

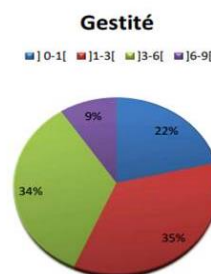


Figure 04: Distribution of patients according to gestity

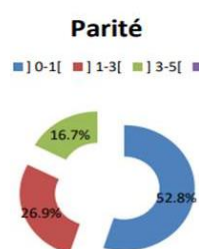


Figure 05: Patient s distribution by parity

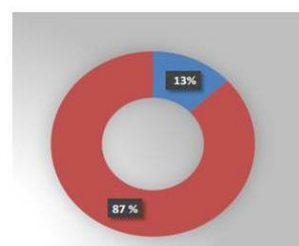


Figure 06: Distribution of patients according to maternal complications

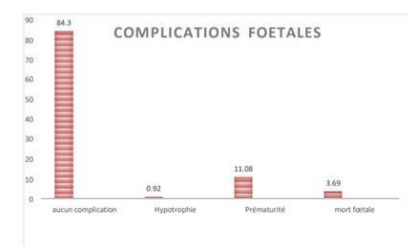


Figure: Distribution of patients according to fetal complications

In our study, (52.8%) had a medical history of arterial hypertension, (15.7%) had a medical history of diabetes, 6 patients (5.6%) had a medical history of thyroid disease and 4 (3.7%) had a medical history of obesity. 87% of the women included in the study had no maternal complications(87%), while 13% had HELLP syndrome and oedema.

Discussion:

In our series, a young maternal age (<25 years) was statistically the most concerned for the occurrence of eclampsia, whereas CONDE-AGUDELO et al.(1997) have shown that advanced maternal age is a risk factor for complicated eclampsia. regarding fetal prognosis, no difference was found between young and old maternal age. However, AYYACHE (2002) noted that advanced maternal age is a factor in poor fetal prognosis, especially as regards of prematurity. In the present study 23 women had renovascular risk factors such as hypertension, diabetes, obesity. According to BEAUFILS (BEAUFILS.M,2008) , renovascular antecedents (hypertension,diabetes, nephropathy, cardiopathy, obesity, smoking, oestroprogestogens), by the vascular lesions may be responsible for placental ischemia, and thus constitute risk factors in the development of complications. In our study , HELLP syndrome was found in 13% of cases, It is important to note that incomplete HELLP syndromes may be the cause of serious maternal and fetal complications, such as eclampsia, cerebral ischemia, hematoma, intrauterine growth retardation or neonatal respiratory distress. (Obstet Gynecol 1996) . In our study, it appears that prematurity is the most common complication in Preeclampsia parturients with 12 cases (11.08%);next is fetal death with 4 cases. Our results are consistent with those of olowu salako (2001) for whom prematurity is the most unfavourable outcome; Hypotrophy was found with a proportion of 0.92% of newborns born from of women pre-lamptic.

Conclusion:

Eclampsia and preeclampsia are still common in developing countries.. They are associated with high maternal and fetal morbidity and mortality; Their management requires a multidisciplinary team, with greater involvement of anesthesiologists and, above all, the creation of specialized obstetric and fetal obstetric and neonatal intensive care.

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Alveolar echinococcosis: a case report

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Abstract

Alveolar echinococcosis is a rare parasitic zoonosis and classically associated with a terrible prognosis because it is determined too late.

We report the case of a 44-year-old woman who consulted the general surgery department A for abdominal pain with weight loss. A lobectomy was performed with excision of the hydatid cyst.

Histological examination revealed a cystic wall lined with a thick anhistoic, lamellar, flaky, eosinophilic layer forming the cuticle. hepatic parenchyma is the site of a chronic granulomatous inflammatory reaction made up of a granuloma. The diagnosis retained is that of hepatic alveolar echinococcosis.

Keywords:

Alveolar echinococcosis, zoonosis, Histological examination

Introduction

Alveolar echinococcosis is a rare parasitic zoonosis due to infection by the larval form of a cestode: *Echinococcus multilocularis* and classically associated with a poor prognosis because it is diagnosed too late.

Material and Methods

This is a retrospective study of one case of hepatic alveolar echinococcosis collected over a 4-year period from January 2020 to December 2023. The diagnosis is made by histopathological (HE).

Results

We report the case of a 44-year-old woman without particulars who consulted the general surgery department A for abdominal pain with weight loss. An abdomino-pelvic ultrasound objectified a microvesicular appearance in in "cluster" and in favor of a hepatic hydatid cyst. A lobectomy was performed with excision of the hydatid cyst.

A lobectomy was performed with excision of the hydatid cyst. Macroscopic examination shows a cystic formation measuring 08.5/05.5/03.5 cm, addressed open, with a thick wall containing whitish membranes (image 1). Histological examination revealed a cystic wall lined with a thick anhistoic, lamellar, flaky, eosinophilic layer forming the cuticle. In contact with the latter, we note the presence of a fibrous shell remodeled by a discrete inflammatory lymphoplasmacytic infiltrate with numerous eosinophilic polymorphonuclear cells (image 2). This wall is attached to a hepatic parenchyma remodeled by an inflammatory infiltrate mainly lymphoplasmacytic and some eosinophilic polymorphonuclear cells with foci of vascular congestion and edema. Elsewhere, this parenchyma is the site of a chronic granulomatous inflammatory reaction made up of a granuloma consisting of epithelioid cells with some multinucleated giant cells as well as lymphocytes and eosinophilic polymorphonuclear cells (image 3). This granuloma is centered by necrosis. The diagnosis retained is that of hepatic echinococcosis accompanied by an epithelial-giantocellular and necrotic granulomatous reaction corresponding to alveolar echinococcosis.



Image 1: Macroscopic appearance. The lobar hepatectomy specimen shows a hepatic parenchyma containing a cystic formation measuring 08.5/05.5/03.5cm, addressed open, with a thick wall containing whitish membranes.

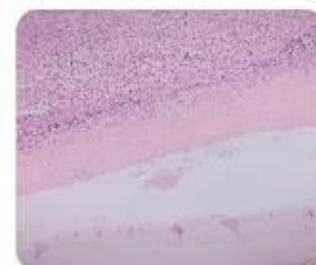


Image 2: Microscopic appearance (HE x4): shows a hepatic parenchyma with a cystic lesion. The cystic wall lined with a thick anhistoic, lamellar, flaky, eosinophilic layer forming the cuticle. In contact with the latter, we note the presence of a fibrous shell remodeled by a lymphoplasmacytic inflammatory infiltrate with numerous

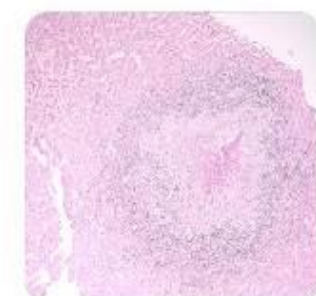


Image 3: Microscopic appearance (HE x4): objective hepatic parenchyma remodeled by a chronic granulomatous inflammatory reaction made up of a granuloma composed of epithelioid cells with a few multinucleated giant cells as well as lymphocytes and eosinophilic polymorphonuclear cells. This granuloma is centered by necrosis

Discussion

Alveolar echinococcosis is a rare zoonosis due to the intrahepatic development of the larva of the cestode *Echinococcus multilocularis*. It develops in the liver in 97% of cases. Abdominal pain, heaviness in the right hypochondrium, dyspeptic disorders and weight loss are signs of discovery. Jaundice is the classic symptom of revelation reflecting an already advanced disease.

Its ultrasound appearance is very varied: it generally takes the form of a heterogeneous solid mass, the contours of which can be diffuse or partially well-defined, and can contain within it areas of liquid content and/or calcifications. The association with PET scan with late acquisition at 3 hours after injection is recommended during the extension assessment in order to look for secondary lesions.

Its diagnosis is based on liver ultrasound supplemented by specific serology. For more unusual clinical forms, punctures or biopsies may then be useful, based on the search for histopathological lesions characteristic of this condition and a molecular diagnosis by PCR.

The management of alveolar echinococcosis is based above all on radical surgical excision, which is the only curative method, and the association with long-term systemic treatment with benzimidazole.

Conclusion

Alveolar echinococcosis is a rare form of helminthic infection related to echinococcus. It may suggest a tumor lesion. Ultrasound shows a heterogeneous mass. Histological study is necessary to confirm the diagnosis of alveolar echinococcosis.

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The epidemiological profil of self-medication in mostaganem
(Northern West Algeria).

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Abstract

Self-medication has become an emerging phenomenon that increasingly threatens public health. The purpose of this study is to determine the prevalence of self-medication at Mostaganem (northern west Algeria), for this, a cross-sectional descriptive study based on the collection of data by questionnaire addressed to pharmacists (30 pharmacies) and patients who self-medicate; during march to June 2019. The results obtained shows that women are often self-medicate (61%) than men (39%) with a sex ratio of 0.65. The most consuming class (76%) is aged between 30 and 50 years and has a university level. Paracetamol is the highest analgesic used with (75%), but the risk incurred by the self-medication with aspirin which is higher than paracetamol, for this reason, it is clear to consider rules for the proper use of self-medication in consultation and at pharmacy to prevent health population risks.

Keywords: questionnaire, pharmacies, over the counter (OTC) drugs, patients, Mostaganem.

1. Introduction

Self-medication is an increasingly encouraged practice in today's society. It is justified by the economic context, demographics and the need for patient empowerment, but it can expose to risks. In this context, we carried out this work to estimate the prevalence of this practice at Mostaganem region, to assess the influencing factors and the causes of this behavior. Self-medication is a practice that has been around for a long time; grandmothers' miracle recipes for treating mild illnesses at home are a kind of self-medication that is described as the use of drugs without a physician's prescription to treat self-recognized illness or symptoms, and an important health issue among the elderly [1]. According to the World Health Organization (WHO), self-medication consists in the fact that an individual resorts to a drug, on his own initiative or that of a loepidemiological study carried out in pharmacies practicing in Mostaganem region, during the year 2019; it was a direct interview with the customers who come at the pharmacy without a prescription to buy drugs called "over-the-counter drugs" or free sale drugs, in order to treat a condition or symptom that he identified himself, without having recourse to a health professional [2]. This practice may present a risk to the patients' health. For that purpose, we conducted a descriptive cross-sectional.

2. Methods

2.1. Presentation of the study

It is a descriptive cross-sectional epidemiological study, which aims to describe the current situation and the epidemiological aspect of self-medication from a survey carried out on pharmacies practicing in Mostaganem region;

2.2. The survey process

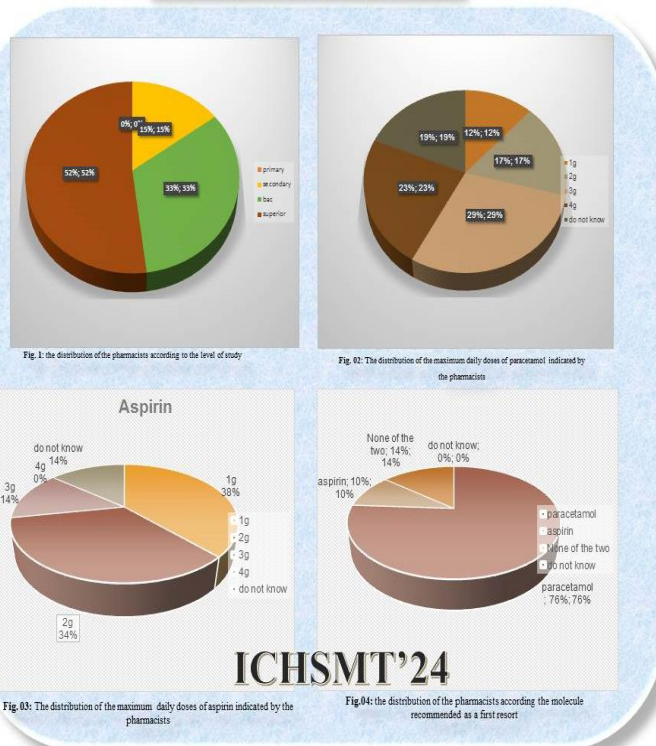
We conducted a descriptive cross-sectional epidemiological study, carried out on pharmacies located at Mostaganem region, the study was conducted during the year 2019, and it was a direct interview with the customers who come at the pharmacy without a prescription to buy drugs called "over-the-counter drugs" or free sale drugs. A questionnaire was composed of two parts; the first part depended on some informations about the pharmacy sellers, the second part reserved to customers



3. Result and Discussion

Through this study based on a direct questionnaire with pharmacists and customers who come to buy these two drugs without a prescription, two parts emerge, the first of which is addressed to pharmacists. Among 158 pharmacists investigated, 52% have a higher education level, 33% had a baccalaureate level, and 15% had a secondary level however, for the primary level, no response was given (Figure 1) Regarding the prescribed dose for the two products, the majority of pharmacists have informations about the prescribed dose, which is (3 to 4g / 24h) for paracetamol (Figure 02), and (1 to 2g / 24h) for Aspirin (figure 03); these results are similar than that mentioned by GREZY C. [03], where the majority of participants indicated aspirin maximum dose with 2 grams per day and paracetamol 4 grams per day; however 12% of them declared that they ignored the maximum recommended daily dose of paracetamol and aspirin respectively (Figure 02) and (Figure 03);

Part 1 : Some information about sellers



Several factors can explain these results, on the one hand, older people, retirees, may have more time available to consult their treating physicians compared to active people, on the other hand, they may also be more often suffering from chronic diseases and therefore consult their specialist physicians more frequently, as they may also have traditionally resorted more often to "grandmothers' remedies" than younger populations [13]. (37%) of our patients who self-medicate have a university level (table 01) which gives them knowledge about these two drugs sold without a prescription and which they are used to treat common illnesses; [19] also in Romania, the study of (Petruța Tărciuc and al, 2020) shows that married urban females with higher university or post-graduate education were more likely to self-medicate [18]. 38% of the responded say they have sufficient information for the cases use of these two drugs paracetamol and aspirin, 29% of participants resorted to self-medication to treat common illnesses, 18% of them, had lack of time and 15% felt doctor's fee was too high (table 03), what is not different from the results found by Molisani M et al, 2019). When asked about the ailment that self-medication diseases recorded during the study period, the majority mentioned that fever (21%), inflammatory disease (21%) and headache (19%) were the most registered for these two product were taken (paracetamol and aspirin), other studies for example that of (Petruța Tărciuc et al 2020) [18] report that fever is the most commonly symptom treated with self-medication [18], also the study of (CHAKRABORTY T. and col, 2009) indicates that fever is the most commonly treated disease by self-medication [22].

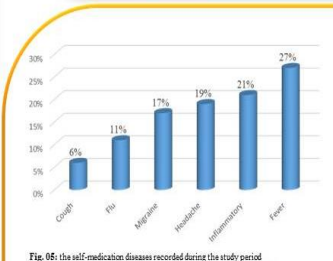


Fig. 05: the self-medication diseases recorded during the study period

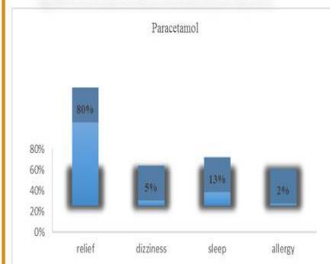


Fig. 06: The side effects after using paracetamol

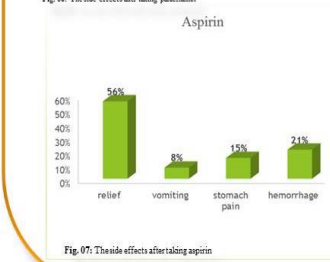


Fig. 07: The side effects after taking aspirin

Consumer awareness of the potential risks associated with the use of paracetamol, only 20% of patients reported having side effects after taking paracetamol, such as sleep (13%), dizziness (4%) and allergy (2%), however, the majority of patients are satisfied with the use of paracetamol because it relieves them, also the study of (N.F.A. EL EZZ, H.S. EZ-ELARAB (2011)[23] reports that (16.9%) said that they suffered from side effects, however the majority is satisfied by the use of this drug[23]. Concerning aspirin, 56% of patients confirm their relief and (44%) of them said that they suffered from side effects such as vomiting (08%), stomach pain (15%) and some hemorrhage(21%); (Figure 10). Note that the use of aspirin can cause bleeding in patients who have some hemorrhages, because the role of aspirin is to increase the blood circulation [17].

Part 2 : Some information about customers

Table 01: Socio-demographic characteristics of the study subjects			Table 02: Sources of medicine for self-medication	
Variables	Percentage		Variables	Percentage
sex	Male	39%	Source of medicine	self-decision 63%
	Female	61%		pharmacists 16%
Age groups	10 - 20	2%		Friends 3%
	21 - 30	24%		Book or internet 18%
	31 - 40	32%		
	41 - 50	33%		
	50 and above	9%		
Education level	Illiterate	10%	Table 03: Self-medication causes	
	Primary	11%	Variables	Percentage
	Secondary	20%	The causes of self-medication	Lack of money 15%
	Bac	22%		Lack of time 18%
	superior	37%		Information on self-medication 38%
				Common diseases 29%

It seems that women self-medicate more often (61%) than men (39%) with a sex ratio of 0.65 (table 01). This result was confirmed by several studies indicating that self-medication exists in both sexes and more in female customers [10] For example, studies have shown that women self-medicate more than men. This female predominance is reflected in the fact, that women procure drugs by self-medication, for themselves as well as for their children [10, 16, 17]. In addition, young mothers (30-39 years old) who were highly educated were most likely to administer medication to their children using the family pharmacy [18]. The adults aged between 40 and 50 years old are the most consumers of these two drugs with (33%), however this percentage decreases beyond the age of 50 reaching (09%), the average age of the patients was 37.13% (table 01)

4. Conclusion

Self-medication is a public health problem that prompts health professionals, including physicians, dispensing pharmacists, and the pharmaceutical industry to intervene at all levels to raise public awareness for this practice. Therefore, it is urgent to sensitize the population on the dangerousness of self-medication, in particular by setting up an information program on adverse effects, drug interactions and abuse of drug consumption. However, it is necessary to educate people for circumstances where they may self-medicate and when they must see a doctor; hence, it seems necessary to take effective interventions to prevent and reduce self-medication. The literature recommended interventions for enhancing knowledge about the side effects of self-medication through media such as magazines, radio, and TV to reduce this practice among the Algerian population.

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Prediction of Pharmacokinetic and Toxicity Properties of Pine Resin

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Abstract

Background: The genus *Pinus* has its gravity center in Northern Africa, mainly in Algeria where it constitutes the most important massive. The raw pine resin acts as a natural biocide. The *in silico* drug likeness filters allow the early preclinical development of drugs by avoiding costly late step preclinical and clinical failure where does the lens come to predict *in silico* pharmacokinetic and toxicity parameters of the Pine resin oleoresin main phytoconstituents widely used in the Algerian traditional pharmacopoeia.

Methods: Resins main compounds were tested using Molinspiration Cheminformatics and SwissADME online tools to predict physicochemical and pharmacokinetic parameters while OSIRIS Property Explorer online tools were used to predict toxicity risks.

Results: The results showed that Abietic, dehydroabietic and neoabietic acids have a low lipophilicity The skin permeability, K_p , values of all compounds ranged from -3.89 to -9.15 cm/s suggesting good skin permeability of the majority of compounds with the exception of Caffeic acid and Vanillin (-6.58 and -6.37 cm/s respectively). The data of *in silico* studies revealed that the toxic and pharmacokinetic characteristics are, mostly, satisfying except for some compounds which have shown toxic effects, in particular Limonene, 4-allylanisole and Vanillin.

Conclusion: We conclude that the extract and its primary phytochemicals can enhance the existing drugs activities without side effects.

Keywords

Pine resin, Pharmacokinetic properties, Toxicity, Phytoconstituents, Lipinski rules, *in silico* prediction.

Introduction

Pine resin is widely used in the Algerian traditional pharmacopoeia for the treatment of muscular pains, as a disinfectant of the respiratory and urinary tracts and as antifungal. The objective of this work was to evaluate the *in silico* antibacterial, pharmacokinetic and toxicity parameters of the Pine resin oleoresin main phytoconstituents with a view to predicting the safety of consuming it.

Material and Methods

Drug likeness, ADME and toxicity prediction were done according to the Lipinski's rules

Molinspiration Cheminformatics and SwissADME online tools were used to predict physicochemical and pharmacokinetic parameters while OSIRIS Property Explorer online tools were used to predict toxicity risks.

Results

Table 1: Physicochemical and pharmacokinetic parameters of the docked compounds

Compound	Abietic acid	4-allylanisole	Caffeic acid	Dehydroabietic acid	(Z)-guggulsterone	Limonene	Myrrhone	Neoabietic acid	Pimaric acid	Vanillin
Physicochemical and pharmacokinetic parameters (Molinspiration Cheminformatics)										
mLogP < 5	5.01	2.82	0.94	5.67	3.62	3.62	3.50	5.31	4.96	1.07
TPSA (Å) < 500	37.30	9.23	77.75	37.30	34.14	0.00	30.21	37.30	37.3	46.5
MW < 500 (g/mol)	302.46	148.2	180.1	300.4	312.4	136.2	228.2	302.4	302.	152.
MV	312.49	154.1	154.5	306.2	312.8	157.3	217.8	312.4	312.	136.
nON < 10	2	1	4	2	2	0	2	2	2	3
nOHNH < 5	1	0	3	1	0	0	0	1	1	1
Lipinski's violation	1	0	0	1	0	0	0	1	0	0
Solubility and pharmacokinetics properties (SwissADME)										
Water solubility	MS	S	SV	MS	MS	MS	MS	MS	MS	SV
Gastrointestinal absorption	H	H	H	H	H	L	H	H	H	H
Log K_p : Skin permeation: cm/s	-4.75	-4.81	-6.58	-4.72	-5.41	-3.89	-5.14	-4.52	-4.20	-6.37
Cytochromes inhibitors	CYP1	No	Yes	No	No	No	Yes	No	No	No
	CYP2	Yes	No	No	Yes	Yes	No	Yes	Yes	No
	CYP2	Yes	No	No	Yes	Yes	No	Yes	Yes	No
	CYP2	No	No	No	No	No	Yes	No	No	No
	CYP3	No	No	No	No	No	No	No	No	No
Toxicity risks (OSIRIS Property Explorer)										
Mutagenic	No	Yes	No	No	No	Yes	Yes	No	No	Yes
Tumorigenic	No	Yes	No	No	No	Yes	No	MR	MR	No
Irritant	No	Yes	No	No	No	Yes	No	No	No	Yes
Reproductive effective	No	No	No	No	Yes	Yes	No	No	No	Yes

mLogP: Logarithm of partition coefficient between n-octanol and water. TPSA: Topological polar surface area. MW: Molecular weight. MV: Molecular volume. nON: Number of hydrogen bond acceptors. nOHNH: Number of hydrogen bond donors. No: no indication found, MR: medium risk. S: Soluble. MS: Moderate to soluble. SH: Soluble to highly soluble. SV: Soluble to very soluble. H: High. L: Low. I: Insoluble.

Discussion

The drug likeness filters allow the early preclinical development of drugs by avoiding costly late step preclinical and clinical failure. Most compounds followed Lipinski's rule of five, similar to that of gentamicin. Similarly for toxicity but some compounds have toxic effects, in particular Limonene, 4-allylanisole and Vanillin,

Abietic, dehydroabietic and neoabietic acids have a low lipophilicity according to Lipinski rules where the physicochemical parameters are associated with acceptable aqueous solubility and intestinal permeability and comprise the first steps in oral bioavailability

The skin permeability, K_p , values of all compounds suggest good skin permeability of the majority of compounds with the exception of Caffeic acid, Vanillin and Gentamicin. Except for Caffeic acid, Vanillin and 4-allylanisole, all docked molecules acted on CYP2C19, responsible for the metabolism of various xenobiotics, including proton pump inhibitors or CYP2C9 which contributes to the metabolism of many drugs, including several NSAIDs.

Conclusion

Oleoresins are an important renewable and sustainable resource of active compounds. Based on ADMET prediction analysis, isolated compounds may be safe candidates in this investigation except Limonene, Vanillin and 4-allylanisole. This study must be completed by the *in vivo* study using other evaluation techniques

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Evaluation of the anti-inflammatory activity on an animal model of ginger essential oil and its formulated emulsion

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Abstract

Medicinal Plants are rich in bioactive compounds which gives them remarkable therapeutic effects. Zingiber officinal, commonly known as ginger, possess various properties such as antimicrobial, anti-inflammatory and antioxidant [1,2].

The aim of this study is to evaluate the acute toxicity and the anti-inflammatory potential of ginger. The acute toxicity of the extract was evaluated in experimental animals. They were observed for 14 days for mortality and any signs of overt toxicity determination. In vivo anti-inflammatory activity was evaluated by paw edema model using Carrageenan in mouses. Due to its pungent odor and peppery flavor, an Oil-in-water (O/W) emulsion was formulated and tested.

The results showed that ginger essential oil extract was included in the category of non-toxic substances. Similarly, the extract showed a significant anti-inflammatory effect in the paw edema model.

Keywords:

Essential oil, Emulsion, anti-inflammatory activity, Ginger, acute toxicity

Introduction

Medicinal plants have been widely used against several diseases since ancient times. Ginger is an essential part of traditional oriental cuisine and medicine. For centuries, its rhizomes have been used to treat many diseases and constitute one of the pillars of Chinese medicine. Inflammation is essential for tissue repair, but it can become pathological and lead to serious diseases such as cancer and diabetes. Current treatments based on steroidal and non-steroidal anti-inflammatory drugs are often limited by their side effects.

In the present study, we investigated the acute toxicity and the anti-inflammatory activity of ginger essential oil.

Material and Methods

Animals

Female NMRI mice that had an average weight of 25–30 g were obtained from Pasteur Institute of Algiers, ALGERIA. The animals were under standard conditions that included a 12:12 h light/dark cycle with ad libitum access to food and water.

Acute oral toxicity study

The acute oral toxicity was evaluated as preconized by the guidance of OECD 423. The assessment consists to administrate orally a unique dose of 2000 mg/kg to NMRI mice. After the administration, the animals were individually observed during the first 30 min and daily. After that, the observation was extended for 14 days. The measurement of pH of the formulation was done in triplicate and average values were taken. Spread ability and organoleptic properties were evaluated by visual inspection. In vivo anti-inflammatory activity was evaluated by paw edema model using Carrageenan in mouses. NMRI mouses were selected and divided into four groups. Group 1 served as control and was treated with distilled water, while groups 2, 3 and 4 were treated with non-steroidal anti-inflammatory drug (Diclofenac); formulated emulsion and essential oil at dose of 500mg/kg, respectively.

Results

Table1: Percentage inhibition of inflammation and anti-inflammatory activity.

Treatment	Percentage inhibition of inflammation (%)	Percentage of paw volume reduction (%)
Control	40.57	-
Diclofenac	29.57	27.11
Ginger Essential oil	22.5	44.54
Emulsion	35.48	12.54

Our results showed that our essential oil was included in the category of non-toxic substances (no mortality was recorded during the 14 days of treatment). Oil-in-water emulsion was stable with a pH close to that of the oral cavity. Carrageenan-induced paw edema model is a suitable test for evaluating anti-inflammatory drugs. Injection of carrageenan into the hind paw induced a progressive edema reaching its maximum at 4 hours. In this model of inflammation, ginger demonstrated an anti-inflammatory activity and thus showed a significant decrease in the paw thickness.

The in-vivo anti-inflammatory activity was assessed by administering dose of 500mg/kg of ginger essential oil in comparison with the standard diclofenac sodium at a dose of 10mg/kg. The percentages of reduction of paw are greater for the essential oil, being 44.54% compared to the positive control, which presents a reduction of 27.11%.

Discussion

The extract displayed efficacy in reducing inflammation compared to the standard anti-inflammatory drug, diclofenac sodium. Unfortunately, these drugs cause increased risk of blood clot resulting in heart attacks unlike the natural products. This response underscores the potent anti-inflammatory properties of ginger extract, aligning with its traditional medicinal uses.

Its superiority over diclofenac sodium suggests potential as a natural alternative to synthetic drugs. However, further investigation is needed to understand its mode of action.

Conclusion

These results indicate that the essential oil of the studied plant, as well as the formulated emulsion, possess significant anti-inflammatory properties while being relatively safe to use.

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Autoantibodies association to Neuropsychiatric Systemic Lupus Erythematosus

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Abstract

Background: Neuropsychiatric systemic lupus erythematosus (NPSLE) is a severe lupus complication that affects the nervous system and causes neurological and/or psychiatric symptoms. Autoantibodies, produced during lupus, can form immune complexes responsible for organ damage and a variety of severe complications, including neurological damage. The evaluation of the presence of the autoantibodies in lupus patients' serum will enable us to identify efficient diagnostic markers for disease assessment. The aim of this study was to determine the immunological profile of lupus patients with neuropsychiatric manifestations.

Methods: Our study included 35 lupus patients, 17 with neurolupus (NL+) and 18 without neurological involvement (NL-). Lupus patients were recruited from rheumatology department of Ben-Aknoun hospital in Algiers for a period of 3 years. All patients underwent clinical evaluation to assess their neurologic and neuropsychiatric manifestations. The assessment of autoantibodies: anti-DNA, anti-nuclear antibodies (ANA) and the antiphospholipid antibodies (APL) including the anti-cardiolipin (Ad) and the anti-β2 glycoprotein antibodies was carried out at the serum level using immunofluorescence and ELISA assays.

Results: Our data showed that central neurological damage occurred more frequently than peripheral damage (88% vs. 14%). Our findings reveal that the presence of anti-DNA, APL and anti-β2 glycoprotein antibodies was associated with neurological involvement ($p=0.0001$, $p=0.004$ and $p=0.012$, respectively). Anti-DNA, APL, Ad, and anti-β2 glycoprotein antibodies were statistically more frequent in central involvement compared to peripheral involvement ($p=0.0005$, $p=0.001$, $p=0.04$, $p=0.038$, respectively). Furthermore, anti-DNA and APL antibodies were associated with the presence of a demyelinating disease in lupus patients ($p=0.006$ and $p=0.030$, respectively). Finally, we reported that NL (+) patients had more severe clinical activity than NL (-) patients ($p<0.0001$).

Conclusion: The identification of autoantibodies involved in neurolupus will help to better characterize the disease and identify differential diagnostic markers between lupus patients with and without neurological involvement.

Keywords:

Antiphospholipid antibodies, Anti-DNA, Autoantibodies, Neuropsychiatric Systemic Lupus Erythematosus.

Introduction

The production of autoantibodies and the diffuse accumulation of immune complexes are the hallmarks of LES, a multisystemic auto-immune disease that causes inflammation and tissue lesions that are the cause of a significant clinical and biological polymorphism¹.

The neuropsychiatric lupus refers to the disorder when lupus affects the brain, spinal cord, and other nerves. This condition is found in about 40% of LES patients. Neurological impairment has a significant impact on the severity of the illness, quality of life, and prognosis, which may lead to events that endanger patients' lives².

In this work, we are interested in characterizing the clinical and immunological profile of neuropsychiatric disorder in a group of Algerian lupus patients. Additionally, we looked for any potential association between the immunological profile and central, peripheral, and psychiatric neurological disorders in lupus patients.

Material and Methods

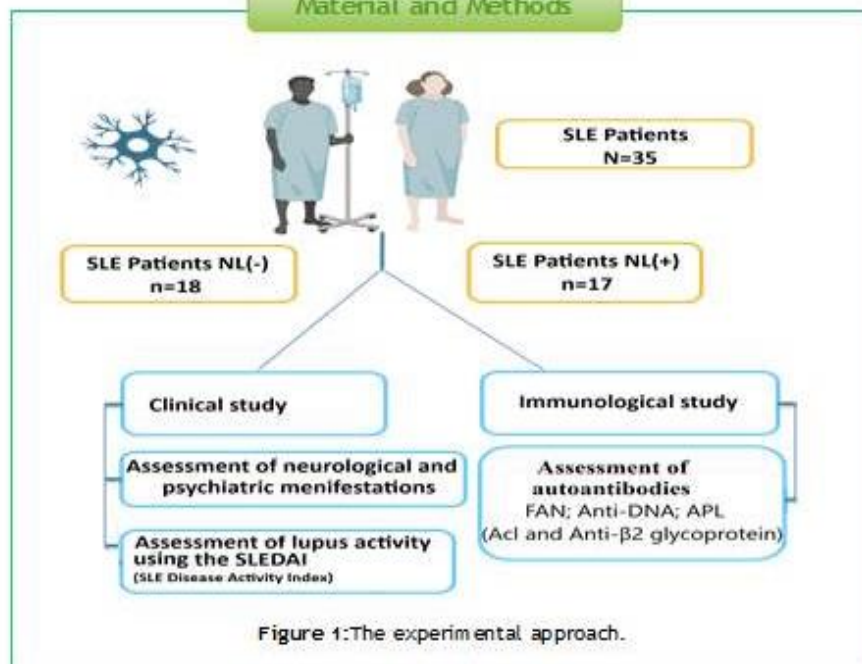


Figure 1: The experimental approach.

Results

Table 1: Frequencies of neurological (central, peripheral) and psychiatric disorders in neurolupus patients.

Manifestations	Patients NL+ (n=17) n (%)
Neurologic	16 (94)
> Central	15 (88)
> peripheral	4 (14)
Psychiatric	4 (14)

According to the results, neurological disorders are more common than psychiatric disorders. Central nervous system disorders are the most common.

Table 2: Results of association analysis between autoantibodies and neuropsychiatric disorders.

Autoantibodies positivity	Neurologic manifestations n=16 n (%)	Psychiatric manifestations n=4 n (%)	P
Anti-DNA	13 (81,25)	3 (75)	0,0001 ****
Anti-Sm	6 (37,50)	2 (50)	ns
Anti-ribosome	0 (0)	1 (25)	ns
Anti-SSA	6 (37,50)	0 (0)	0,004 **
Anti-URNP	3 (18,75)	1 (25)	ns
APL	7 (43,75)	1 (25)	0,012 *

These findings demonstrate the link between anti-DNA, anti-APL, and anti-SSA with neurological disease in lupus patients.

Table 3: Results of the association study of autoantibody profile with central and peripheral neurological disorders.

Autoantibodies	central damage n=15 n (%)	peripheral damage n=3 n (%)	P
ANA	12 (80,58)	3 (100)	0,0005 ****
Anti-nucleosome	4 (26,67)	2 (66,67)	ns
Anti-histone	2 (13,33)	1 (33,33)	ns
Anti-DNA	12 (80,58)	3 (100)	0,0005 ****
Anti-Sm	5 (33,33)	1 (33,33)	ns
Anti-URNP	2 (13,33)	1 (33,33)	ns
Anti-SSA	6 (40,00)	1 (33,33)	ns
Anti-SSB	3 (20,00)	0 (0)	ns
APL	7 (46,67)	0 (0)	0,001 **
Anti-cardiolipin	5 (33,33)	0 (0)	0,040 *
Anti-β2 glycoprotein	4 (26,67)	0 (0)	0,038 *

These results suggest that central nervous damage would be associated to the production of Anti-DNA, Anti-Sm and APL autoantibodies.

Table 4: Relationship between autoantibodies and the onset of stroke and demyelinating syndrome.

	stroke N=3 n (%)	demyelinating disease N=11 n (%)	P
Anti-DNA	2 (66,67)	10 (90,91)	0,006 **
Anti-Sm	1 (33,33)	3 (27,27)	ns
Anti-SSA	1 (33,33)	4 (36,36)	ns
Anti-SSB	1 (33,33)	2 (18,18)	ns
APL	1 (33,33)	5 (45,45)	0,030 *

These findings imply that the development of demyelinating syndrome in our patients may be linked to the presence of anti-DNA and APL.

Our analysis revealed that patients with neurolupus exhibited stronger and higher clinical activity than patients with lupus without neurologic disorder ($17,12 \pm 8,73$ vs. $7,11 \pm 7,51$, $p=0,001$).

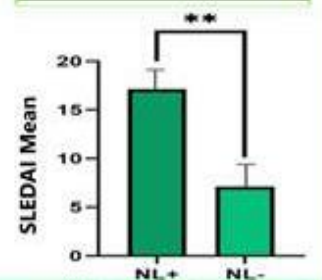


Figure 2: Pathology activity measured by the SLEDAI score in patients with and without neurological disorders.

Discussion

Neurological damage is a severe form of lupus, characterized by a variety of neuropsychiatric symptoms that vary in severity. Our research focused in 35 patients with SLE, 17 of whom had a neurological disorder, representing a relatively high frequency of 44.73%.

Findings showed that neurological disorders are the most common in our cohort (94%), while psychiatric disorders were found in 14% of cases. Additionally, among neurological disorders, central nervous system disorders were more common than peripheral ones (88% vs. 14%, respectively). These findings are consistent with previous research³.

Our results suggest that damage to the central nervous system would be associated to an increase in the production of autoantibodies anti-DNA and APL, and therefore with an accentuation of the autoimmune response.

Conclusion

The clinical and immunological study of neurological and psychiatric damage in lupus will allow a better characterization of NPSLE and therefore an earlier and more accurate diagnosis.

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Beneficial Effects of *Thymus algeriensis* Essential Oil on Pathophysiological Alterations Induced by Experimental Cryptococcosis

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Abstract

This study investigates the anti-fungal and anti-inflammatory potential of *Thymus algeriensis* essential oil in an experimental model of cryptococcosis. Following intranasal infection with *Cryptococcus* sp., the essential oil was administered, resulting in a significant reduction in myeloperoxidase (MPO) and eosinophil peroxidase (EPO) activities, as well as a marked diminution of fungal load. These findings underscore the therapeutic potential of *Thymus algeriensis* essential oil in modulating inflammatory responses and effectively reducing fungal infections.

Keywords:

Cryptococcus sp., Cryptococcosis, Inflammation, Essential oil, *Thymus algeriensis*

Introduction

Excessive inflammation during respiratory fungal infections poses a significant challenge in disease management, contributing to both the severity of infection and the risk of complications, ultimately increasing patient mortality. *Thymus algeriensis*, a Mediterranean aromatic plant, contains essential oils with promising biological activities. The aim of this study was to investigate the anti-fungal and anti-inflammatory potential of its essential oil in an experimental model of cryptococcosis.

Material and Methods

-Experimental design: Mice were divided into three groups: a control group receiving NaCl, a model group receiving an intranasal administration of *Cryptococcus* sp., and a treated group receiving the essential oil of *Thymus algeriensis* via gavage 72 hours post-infection for 3 days in the cryptococcosis model.

-Parameters analyzed: Myeloperoxidase (MPO) and eosinophil peroxidase (EPO) activities were measured using colorimetric enzymatic reactions. Fungal load was determined by culturing lung samples on Petri dishes.

-Statistical analysis: Data were analyzed using one-way ANOVA, and graphs were generated using Prism 8.0.2 software.

Results

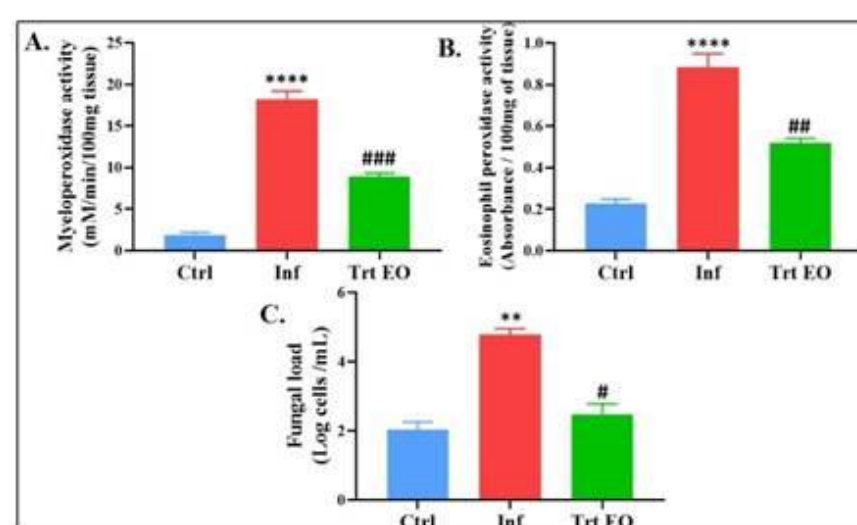


Figure: Evaluation of (A) myeloperoxidase activity, (B) eosinophil peroxidase activity, and (C) fungal load in lungs following treatment with *Thymus algeriensis* essential oil in a cryptococcosis model.

p < .01; **p < .0001 compared to the control group of mice.

#p < .05; ##p < .01; ###p < .001 compared to the infected group of mice.

Discussion

The observed effects are likely due to thymol, the main component of *Thymus algeriensis* essential oil. Thymol likely influences the host-pathogen interaction through its antifungal activity against *Cryptococcus*, attributed to its hydrophobic nature and its ability to target key proteins involved in the pathogen's metabolism. Additionally, thymol protects the host by exerting anti-inflammatory effects, helping to control potential damage caused by an excessive inflammatory response.

Conclusion

The essential oil of *Thymus algeriensis* may play a key role in modulating the inflammatory response during fungal infections by controlling its intensity while simultaneously combating the pathogen.

Optimizing Immune Responses in Pulmonary Infections via Ion Channel Targeting

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Abstract

This study investigates the immunomodulatory potential of targeting sodium channels during pulmonary infections. Using an experimental pneumonia model induced by nosocomial bacteria, a natural sodium channel blocker purified from scorpion venom was administered 24 hours post-infection. Blood and lung analyses revealed significant increases in C-reactive protein levels and myeloperoxidase activity, correlating with enhanced immune response and improved bacterial clearance. These findings underscore the role of sodium channels in modulating host defenses and highlight their potential as novel therapeutic targets for managing respiratory infections.

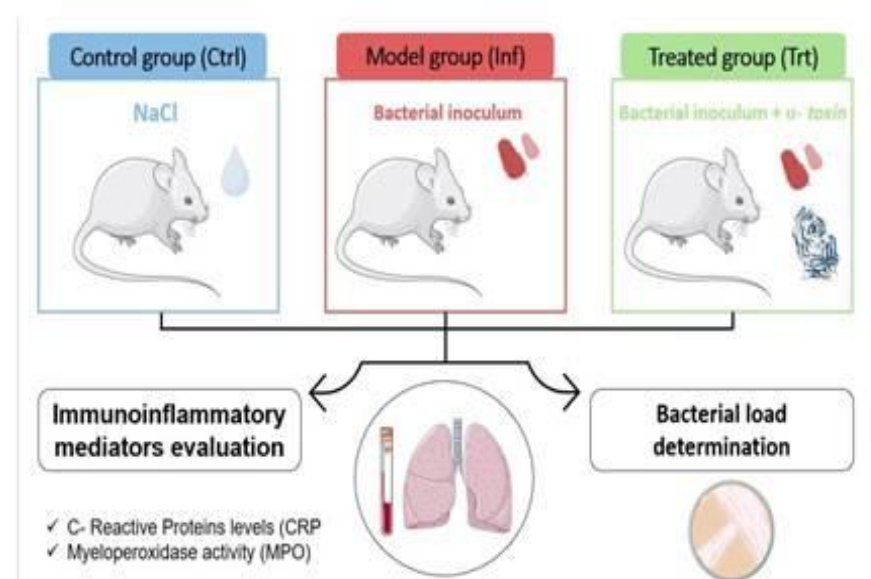
Keywords:

Infection, Inflammation, Ion channel

Introduction

Pulmonary infections pose a significant public health challenge, leading to considerable morbidity and mortality. The interplay between pathogens and the host's immune defenses is crucial, requiring a robust immune-inflammatory response for effective pathogen clearance. The aim of this study was to evaluate the modulation of immune responses by targeting sodium channels expressed on immune cells.

Material and Methods



Results

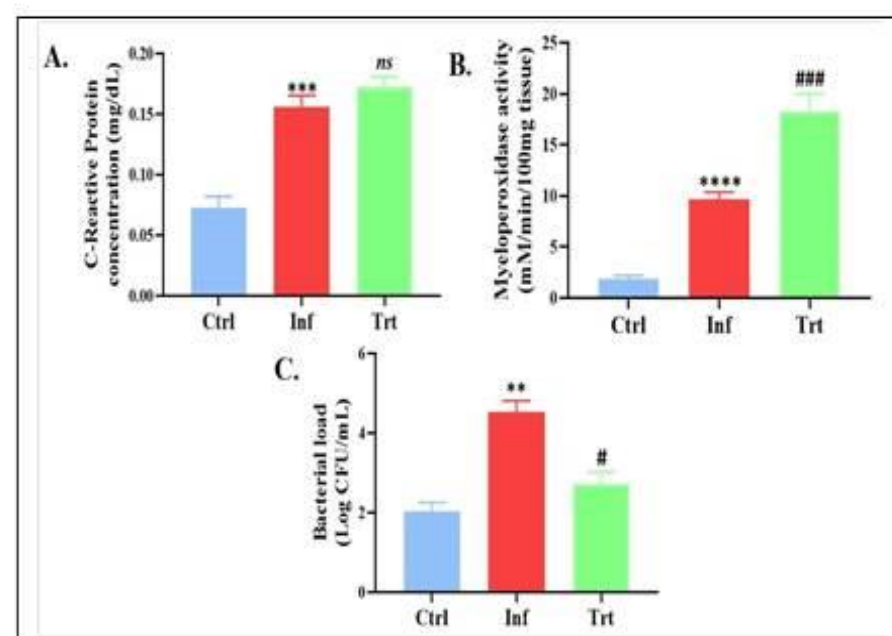


Figure: Evaluation of (A) C-Reactive Protein levels, (B) Myeloperoxidase activity, and (C) Bacterial Load in lungs following treatment with α -toxin from Algerian scorpion in a pulmonary infection model.

** $p < .01$; *** $p < .001$; **** $p < .0001$ compared to the control group of mice.
ns $p > .05$; # $p < .05$; ### $p < .001$ compared to the infected group of mice.

Discussion

Targeting sodium channels with the toxin appears to enhance the immune response, likely through the modulation of ionic homeostasis, particularly sodium and calcium ions. This regulation may strengthen immune cell activity, enabling a more effective pathogen clearance. By influencing ion fluxes, the toxin potentially optimizes key cellular functions, such as activation, migration, and the release of inflammatory mediators, thereby contributing to a heightened immune defense against infection.

Conclusion

Prolonged activation of sodium channels during infections modulates the immune response, enhancing the host's defenses and positioning these receptors as novel pharmaceutical targets.

Study of the effect of *Echinococcus granulosus* on the production of TNF- α induced during Crohn's disease.

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Abstract

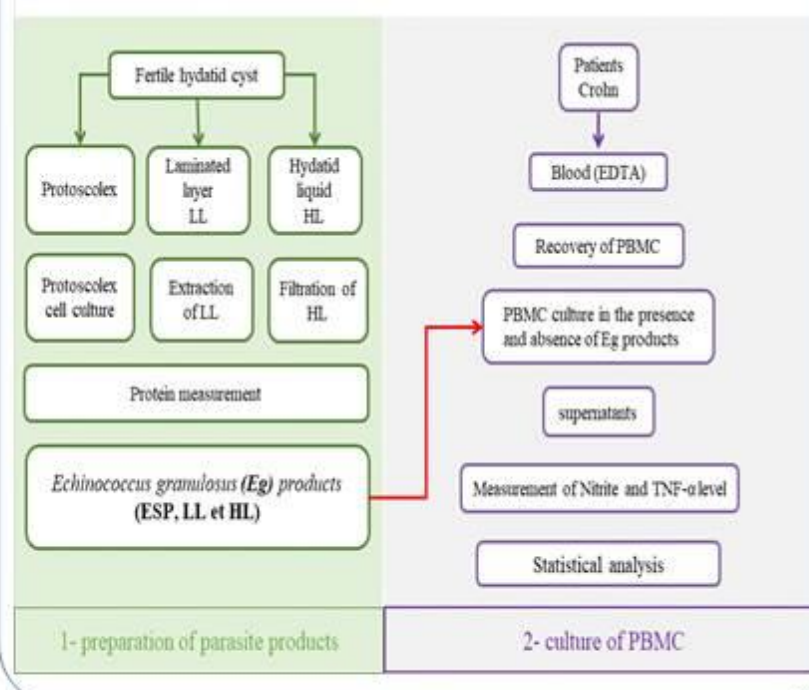
Inflammatory bowel disease (IBD) is an immunologically mediated disease. Notably, it is less common in countries where there is a greater risk of exposure to helminths, such as *Echinococcus granulosus*. These observations support the "hygiene hypothesis", which states that childhood exposure to helminths reduces the risk of developing IBD. Many recent studies in this area suggest that helminths could be useful in regulating the immune response associated with IBD. In this work, we investigated the effect of *Echinococcus granulosus* on the inflammatory response induced in patients with Crohn's disease. We focused on evaluating the ex-vivo effect of extracts of this parasite (protoscolex excretion-secretion products (ESP), lamellar membrane extract or hydatid cyst fluid) on nitric oxide (NO) and TNF- α production by Peripheral blood mononuclear cells (PBMC) from patients with Crohn's disease.

Keywords: *Echinococcus granulosus*, Crohn's disease, TNF- α , nitric oxide (NO).

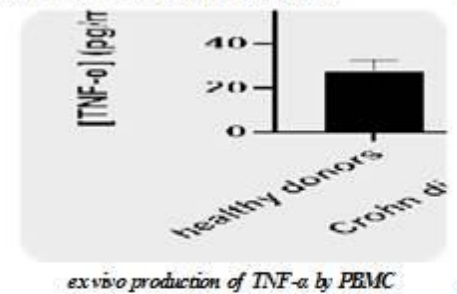
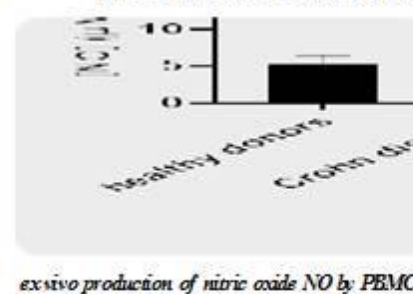
Introduction:

Echinococcosis is a cosmopolitan zoonosis caused by the larval stage of *Echinococcus granulosus*, endemic in Algeria. According to the hygiene hypothesis, reduced exposure of the immune system during childhood to bacteria and parasites contributes to the onset of chronic inflammatory bowel disease (IBD). A number of studies in this area suggest that helminths could be useful in regulating the immune response associated with chronic inflammatory bowel disease (IBD). In this work, we studied the effect of *Echinococcus granulosus* on the inflammatory response induced in patients with Crohn's disease.

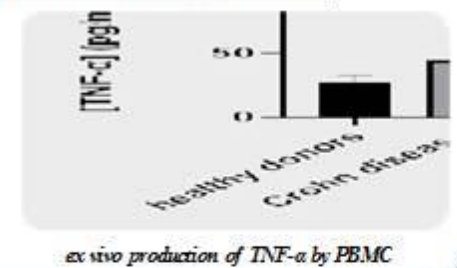
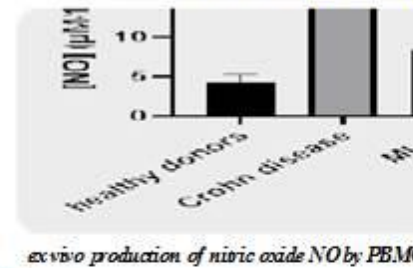
Experimental procedure



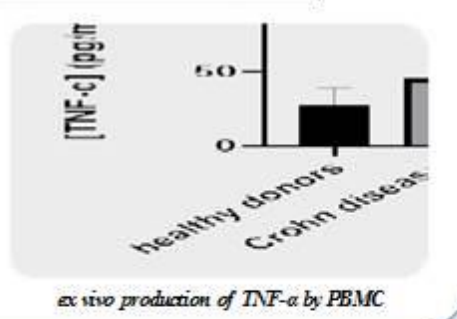
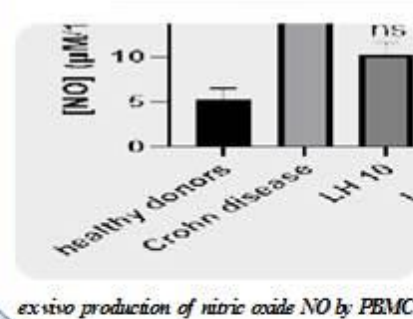
1-Study of nitric oxide (NO) and TNF- α production during Crohn's disease (CD):



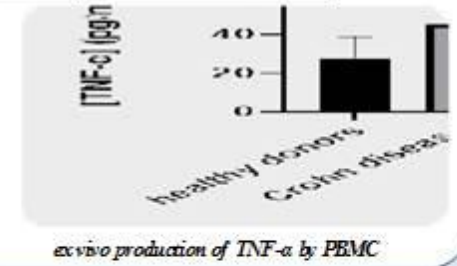
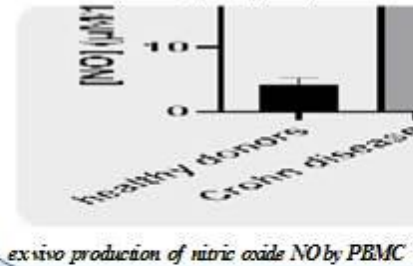
2-Study of the effect of ML on NO and TNF- α production in Crohn's disease:



3-Study of the effect of HL on NO and TNF- α production in Crohn's disease:



3-Study of the effect of ESP on NO and TNF- α production in Crohn's disease:



Discussion

Our results are in agreement with previous work and show:

- A significant increase in nitric oxide NO and TNF- α production by PBMCs of Crohn's disease patients. This demonstrates the activation of an inflammatory response in patients;
- a remarkable reduction in NO production by PBMC of patients with Crohn's disease, in the presence of *Echinococcus granulosus* products (extracted from ML, LH and PES). This suggests the establishment of a probable anti-inflammatory effect exerted by these products on the immune response at play during Crohn's disease.

Conclusion

The results of this study are in line with the hygiene hypothesis, according to which the use of helminths or their products could represent a promising therapeutic strategy for autoimmune and inflammatory diseases such as Crohn's disease.

The effect of honey bee product on immune functions

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Abstract

Background: Propolis is a natural product, collected by honeybees, from various plant sources. Propolis is beeswax with rich bioactive compound content, its bioactive

Compounds are generally flavonoids and polyphenols, according to its chemical composition, propolis has many biological effects on anti-inflammatory and cellular immunity, wound healing and antioxidant metabolisms.

Methods: Our study aims to assess the in vitro effects of aqueous extract of propolis on the immune function of peripheral blood mononuclear cells (PBMC). Four fresh samples of propolis was collected from four localities of Tlemcen's region (Ain Nefza, Mansourah, Beni Mestar, and Beni Add) in September 2024, Propolis samples were collected using propolis traps directly from previously classified *Apis mellifera* honey bee hives. After collecting them, the samples were stored in plastic containers in the freezer and below at temperature (-20) C° to make it solid and able to be ground using an electric grinder to turn it into a powder for the purpose of increasing its surface area exposed to the solvent when preparing extracts, the extract was prepared by dissolving 20 g of powder in 200 ml of distilled water ,blood samples were placed in test tubes The tubes were transferred to the incubator for 30 minutes at a temperature of (37) C° and separate the serum from the rest of the blood components using a centrifuge at a speed of 3000 rpm for 15 minutes. Micropipettes were used to withdraw the serum and keep it in the freezer at a temperature of (-20°C) until the required tests are performed. PBMC were incubated in the absence or presence of propolis aqueous extract and the evaluation of a possible cytotoxicity of propolis was carried out using MTT assay. Oxidative markers ((Malondialdehyde MDA, carbonylated proteins, CARP, Glutathione, GSH, catalase and nitric oxide NO) were investigated after 48-h incubation.

Results: Our result showed that aqueous extract of propolis improved PBMC Proliferation significantly accompanied by the increase in NO it also increased the intracellular GSH and MDA levels in PBMC proliferation potency

Conclusion: propolis has a beneficial effects on immune status during the aging process.

Keywords:

Propolis, aqueous extract, proliferation, biological activity.

Introduction

Propolis is a natural product with a gummy consistency and a complex, composition of a mixture of beewax, resin materials, pollen, and essential oils collected by honey bees from tree buds and beard, and produces after its treatment and mixing with enzymes [1]. It contains among its components many secondary metabolites such as Flavonoids, Phenolic Compounds, alkaloids, and Saponins, which stimulates its various effects, especially its work as a strong antioxidant oxidation[2].

Material and Methods

Four fresh samples of propolis was collected from four localities of Tlemcen's region (Ain Nefza, Mansourah, Beni Mestar, and Beni Add) in September 2024, Propolis samples were collected using propolis traps directly from previously classified *Apis mellifera* honey bee hives.

the extract was prepared by dissolving 20 g of powder in 200 ml of distilled water

PBMC were incubated in the absence or presence of propolis aqueous extract and the evaluation of a possible cytotoxicity of propolis was carried out using MTT assay. Oxidative markers (intracellular glutathione, superoxide dismutase, catalase, hydroperoxide and carbonyl protein contents) were investigated after 48-h incubation

Results

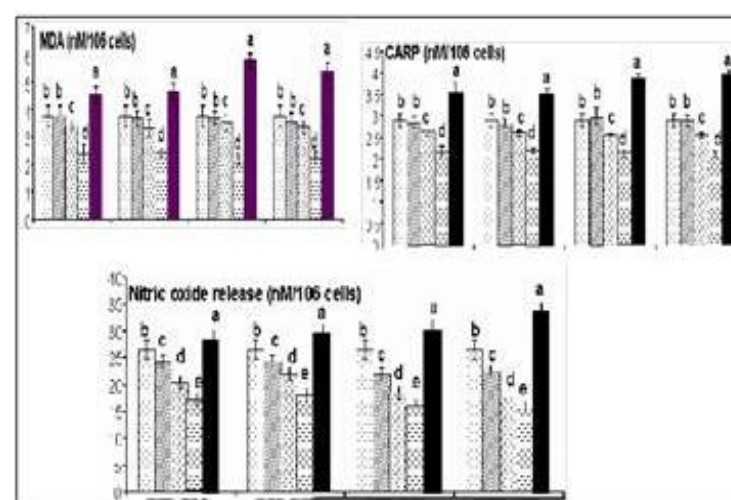


Figure 1. Oxidative stress markers of lymphocytes

Discussion

Several studies have demonstrated the therapeutic potential of propolis, particularly its widely established antioxidant action, which has been related to the presence of flavonoids and phenolic acids in its composition. Our result showed that aqueous extract of propolis improved PBMC Proliferation significantly accompanied by the increase in NO it also increased the intracellular GSH and MDA levels in PBMC proliferation potency.

Conclusion

Propolis has many potential effects on the immune response. Previous research has demonstrated that propolis components have a direct regulatory effect on fundamental immune cell functions. According to the findings of this study, propolis extracts has a beneficial effects on immune status during the aging process. We conclude from the results of the current study that the propolis has an important role in preventing the harmful effects of oxidative stress.

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Systematic Review: Efficacy, Tolerance, and Adherence of Metformin XR vs. Metformin IR in Managing Type 2 Diabetes Mellitus

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Abstract

Metformin is a widely used first-line treatment for type 2 diabetes (T2DM), known for its effectiveness in lowering HbA1c, low risk of hypoglycemia, affordability, and ability to reduce complications. However, gastrointestinal side effects lead to discontinuation in up to 10% of patients. This review compares the immediate-release (IR) and extended-release (XR) formulations of metformin, based on ten studies published between 2004 and 2023. Both formulations significantly reduce HbA1c (1.5–2.5% for XR, 1.0–2.0% for IR), but XR metformin offers better gastrointestinal tolerance, higher patient adherence, and preference, due to fewer side effects and simpler dosing. Further research is needed to assess the long-term outcomes of XR metformin in real-world clinical practice.

Keywords

Metformin, Diabetes, Efficacy, Adherence, Tolerance.

Introduction

Metformin is an antidiabetic agent recommended as a first-line treatment for the therapeutic management of type 2 diabetes, as endorsed by the consensus statements of the European Association for the Study of Diabetes and the American Diabetes Association (1,2). This privileged status is based on its efficacy in controlling HbA1c, a low risk of hypoglycemia, low cost, modest weight loss or weight stabilization, and its ability to reduce both microvascular and macrovascular complications in diabetic patients (3). However, up to 25% of patients develop gastrointestinal side effects, which leads to treatment discontinuation in 5–10% of users (4). Metformin is available in immediate-release (IR) and extended-release (XR) formulations, designed to improve tolerability and simplify dosing. This systematic review explores their comparative effectiveness, safety, and impact on patient tolerance, compliance, and satisfaction.

Material and Methods

Data for this review were collected from the PubMed and Springer database, focusing on both IR and XR formulations of metformin. The search included studies published between 2004 and 2023, specifically selecting and analyzing ten randomized controlled trials (RCTs), observational studies, and retrospective reviews comparing these two formulations.

Results

The figure 1 shows a comparison of the mean % value of HbA1c after 16 weeks of treatment with metformin IR and metformin XR in two different groups of patients.

The figure 2 shows gastrointestinal tolerability in patients switched from immediate-release metformin to metformin-XR. A significantly higher proportion experienced gastrointestinal (GI) adverse events during the first year on immediate-release metformin compared to metformin-XR.

The figure 3 shows GI side effects during the first year of treatment with either immediate-release metformin or metformin-XR were analyzed separately. The analysis showed a significantly higher percentage of patients reported GI adverse events during the first year with immediate-release metformin compared to metformin-XR.

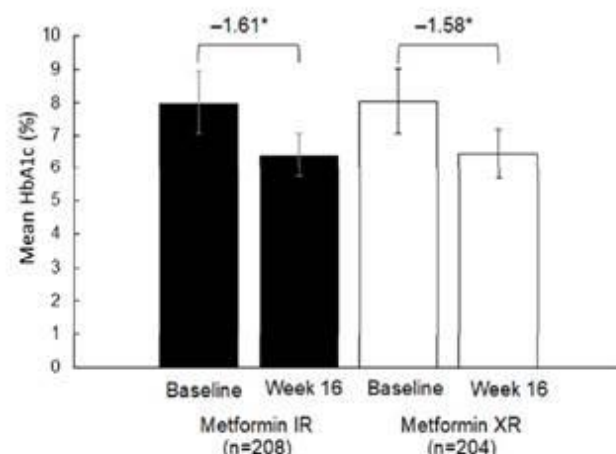


Figure 1: impact of IR and XR metformin formulations on HbA1c levels in type 2 diabetes patients (5)

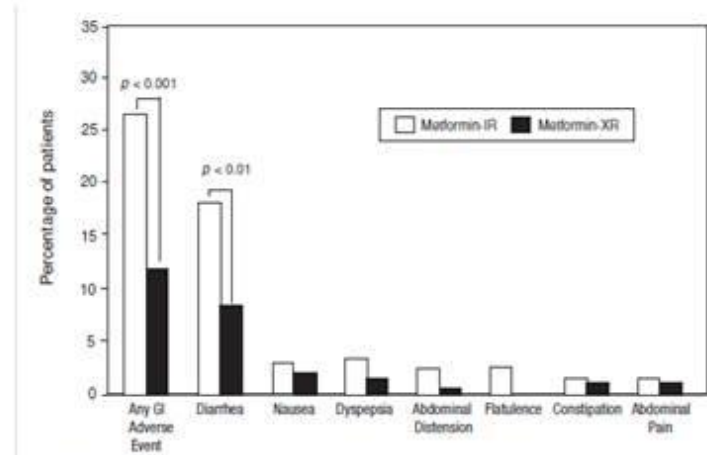


Figure 2: Frequency of gastrointestinal adverse events in patients taking immediate-release metformin before switching to metformin-XR (6)

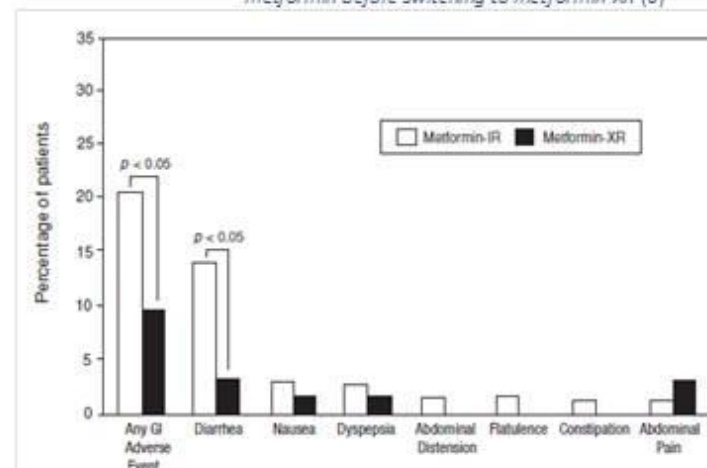


Figure 3: Frequency of gastrointestinal adverse events in patients initiating treatment with metformin-XR versus immediate-release metformin (6)

Discussion

Efficacy

The results of the studies included in this review converge to demonstrate that both XR and IR formulations significantly reduce HbA1c levels, a key indicator of glycemic control in T2DM (7–9). Respectively, by 1.5% to 2.5% and 1.0% to 2.0%, depending on the study (10,11).

Tolerance

The studies examined in this review consistently demonstrated better gastrointestinal tolerance in patients taking metformin XR compared to those taking metformin IR (5,6). Particularly noteworthy is the study by Blonde et al., which shows that the incidence of GIARs decreased to 11.71% in patients switched to XR metformin, compared to 26.34% in those continuing with IR metformin (6). In addition, the frequency of diarrhea dropped significantly from 18.05% to 8.29% (6). This improvement in GI tolerance with metformin XR may enhance treatment adherence and improve patient quality of life, which is essential in the long-term management of T2DM (10,11).

Dose

The simplified once-daily dosing regimen of XR metformin has been shown to be as effective as IR metformin at equivalent dosages for treating T2DM (7,8). It ensures consistent absorption and stabilization of blood sugar levels throughout the day (9,12). Additionally, this regimen promotes treatment adherence, reduces GI intolerance, and provides a flexible treatment option (13).

Patient preference

Upon transitioning from metformin IR to XR, patients report a significant reduction in GIARs, influencing their preference for treatment (6). Furthermore, a recent study found that patients favored XR metformin formulations due to improved gastrointestinal tolerance and a more agreeable taste compared to IR metformin tablets (14).

Conclusion

This systematic review evaluates the effectiveness of immediate-release (IR) and extended-release (XR) metformin formulations in the management of Type 2 Diabetes Mellitus (T2DM). Both formulations significantly lower HbA1c levels, with XR metformin demonstrating better gastrointestinal tolerance, which contributes to improved treatment adherence. Patients tend to prefer XR metformin due to fewer gastrointestinal adverse events. Despite promising results, the limited data and use of XR metformin warrant further research to fully assess its efficacy and long-term outcomes in real-world settings.

Canal irrigation: The effect of the essential oil of *Curcuma longa* L on *Enterococcus faecalis* and associated *Candida albicans*

Recurrent endodontic infections

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Abstract

The exploitation of aromatic plants for their biocompatibility proves interesting, notably *Curcuma longa* L on the one hand. This plant is indeed renowned for its anti-inflammatory, anti-oxidant and anti-microbial properties and its many benefits for health. Studies are multiplying on this subject as well than on its mechanisms of action.

In this work, we carried out a therapeutic trial to evaluate the effect of *Curcuma longa* L on *Enterococcus faecalis* and *Candida albicans* frequently found in secondary ductal infections and/or persistent.

Keywords:

Recurrent endodontic infection, Recurrent endodontic infection, *Enterococcus faecalis*, *Candida albicans*, essential oil of *Curcuma longa* L.

Introduction

Endodontic infection, resulting from the entry of microorganisms into the system through various portals of entry, can result in periapical lesions.

Endodontic treatment largely depends on the effectiveness of root canal irrigation, a crucial step to prevent bacterial resistance of *Enterococcus faecalis* and *Candida albicans* during initial endodontic treatment which is responsible for recurrent endodontic infections.

Material and Methods

Establish a minimum inhibitory concentration of the essential oil concentration of *Curcuma longa* L against a strain of *Enterococcus faecalis* and *Candida albicans* using the well microplate technique.

Results

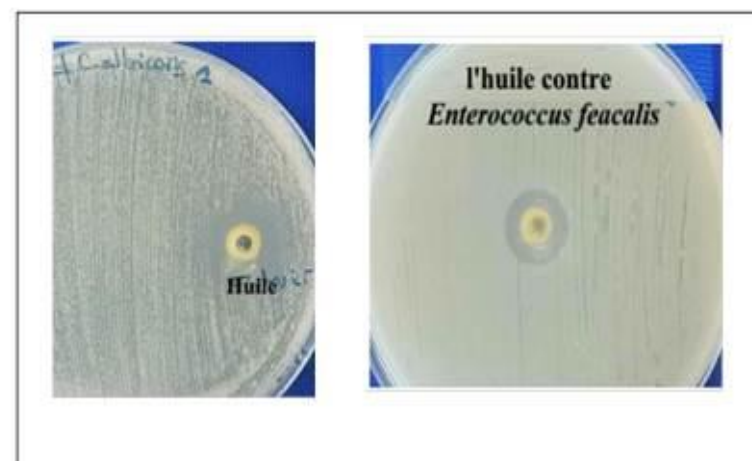


Figure1. Résultats de l'activité antimicrobienne par la technique des puits.

The microwell plate method showed that the essential oil of *Curcuma longa* L at a concentration of 0.62 mg/mL reduced the growth of *Enterococcus faecalis* and the growth of *Candida albicans*.

Discussion

The antibacterial activity of Turmeric against *E. faecalis* is carried out for the first time in the present study. In the study Asurim A et al., (2020) showed the in vitro antibacterial activity of the curcumin against *E. faecalis* (ATCC 51299), *E. coli* (ATCC 25922) and *S. aureus* (ATCC 25923), for MIC values of 125 µg/ml, 31.2 µg/ml, 31.2 µg/ml and 125 µg/ml for *E. faecalis*, *E. coli*, *S. aureus* and *C. albicans*, respectively. The results of this study reveal that curcumin in low concentrations has an antimicrobial effect on *E. faecalis* species, *E. coli*, *S. aureus* and *C. albicans*.

The study carried out by Huan Wu et al., (2024) which has the theme: the chemical composition of ethanol extract of Turmeric (*Curcuma longa* L) and its antimicrobial and free radical scavenging abilities revealed that the antimicrobial effects of the extract ethanolic Turmeric in a range of practical concentrations (0.1, 1 and 10 mg mL⁻¹) have been evaluated against a variety of Gram-negative bacteria such as *E. coli* and *Pseudomonas* sp and Gram-positive (*E. faecalis*, *L. innocua* and *S. aureus*), this is in agreement with our results on the fact that *Curcuma longa* L inhibits the growth of *Enterococcus faecalis*.

Conclusion

This study highlighted the possibility of using the essential oil of *Curcuma longa* L as an irrigation solution during endodontic treatments.

References

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Enhancement of the Anti-Staphylococcal Effect of Fluorescent *Pseudomonas* Strains.

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²Laboratory of Microbiology and Vegetal Biology, University of Mostaganem, Mostaganem 27000, Algeria.

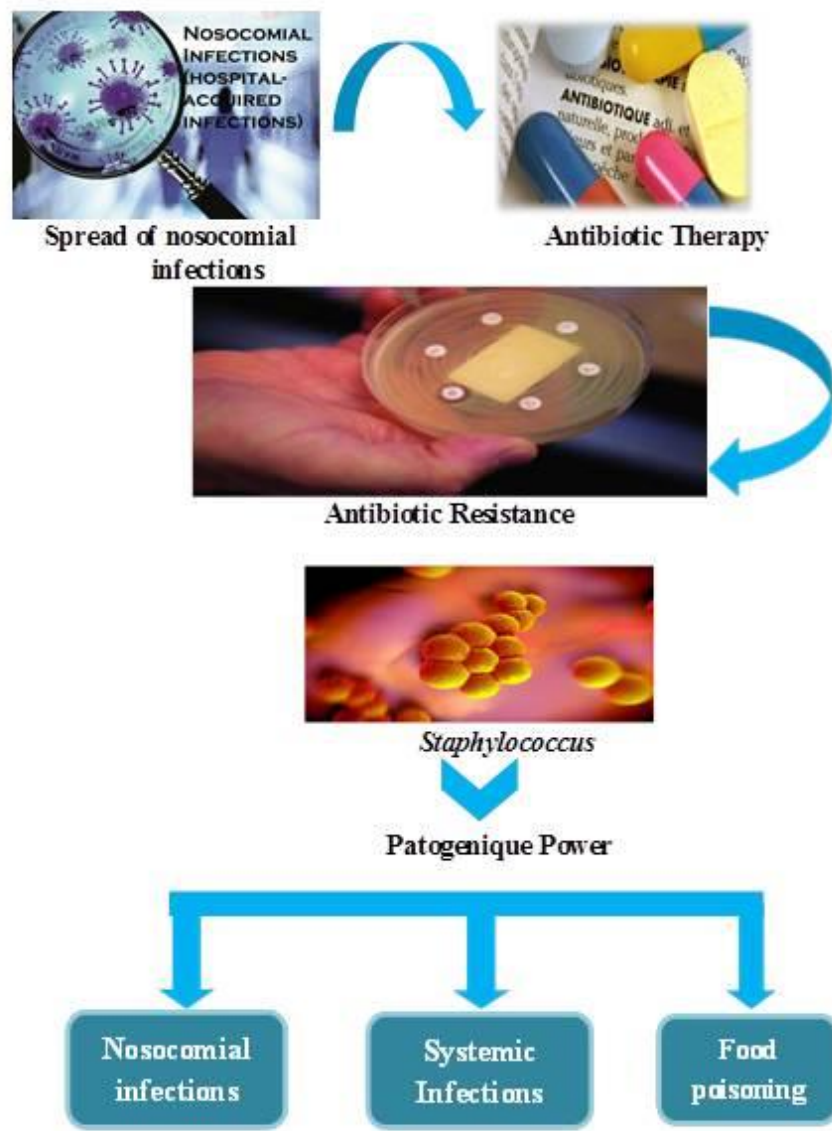
Abstract

Bacterial resistance is one of the most serious threats to world health today [1]. *Staphylococcus* genus is one of those germs that have a strong adaptive ability and have developed different mechanisms of antibiotic resistance [2]. For the past twenty years, great interest has been shown in rhizobacteria of the genus *Pseudomonas* due to their ability to produce various inhibitory substances [3]. Through this communication, we highlight the anti-staphylococcal effect of *Pseudomonas* strains isolated from wild grasses.

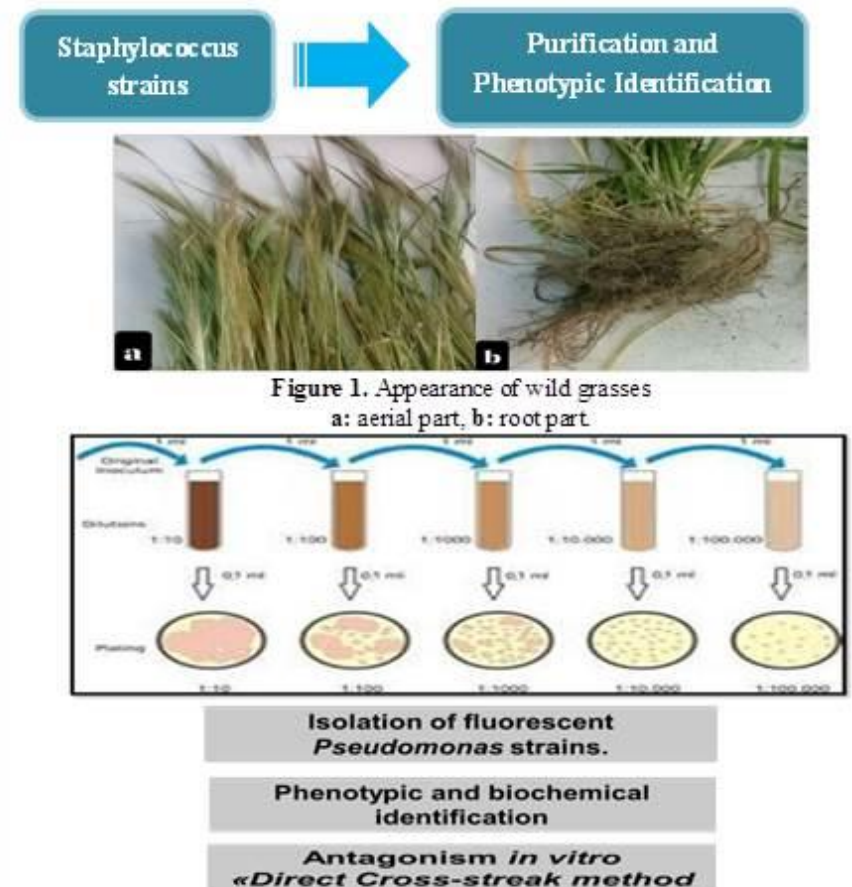
Keywords:

Staphylococcus aureus, Infections, *Pseudomonas*, Inhibition.

Introduction



Material and Methods



Results

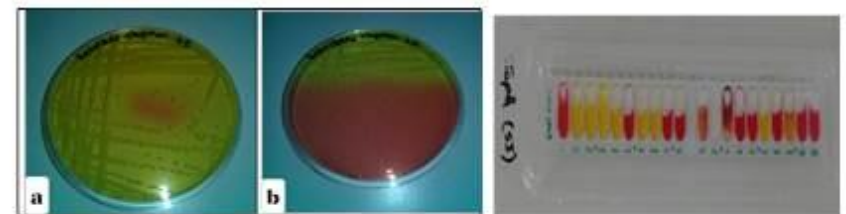


Figure 2. Macroscopic appearance of *Staphylococci* colonies on Chapman medium.
a: « SI » strain, b: « SH » strain.

Figure 3. Biochemical Identification of *Staphylococcus* Strains.



Figure 4. Macroscopic appearance of *Pseudomonas* isolates
Figure 5. Antagonistic activity of fluorescent *Pseudomonas* against *S. aureus*

Table 1. Diameter of inhibition zones.

Test strain	Antagonistic strain	P20	P21
<i>S. aureus</i> « SH »		16 mm	17 mm
<i>S. aureus</i> « SI »		0 mm	9 mm

Conclusion

Pseudomonas strains have anti-staphylococcal power which qualifies them to have an application in the medical field. In-depth study of the antagonistic activity of the extracted molecule against pathogenic *Staphylococci* is useful.

References

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Exploring Natural Compounds for PD-L1 Inhibition in Cancer Treatment: A Molecular Docking Approach

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Abstract

Background: PD-L1 (Programmed death-ligand 1) is a key therapeutic target in cancer treatment due to its role in immune system evasion. Effective inhibition of PD-L1 can enhance cancer therapy outcomes. The objective of this study was to identify potent PD-L1 inhibitors from natural compounds.

Methods: A molecular docking study was conducted using the Surflex program to screen 1,820 natural compounds obtained from the Eastern Africa Natural Products Database (EANPDB). The binding affinities were assessed, and ADME properties were analyzed to determine the pharmacokinetic potential of the top compounds.

Results: Compounds S_347, S_136, and S_175 demonstrated the highest binding affinities to PD-L1, with values of 6.12 M⁻¹, 5.42 M⁻¹, and 5.35 M⁻¹, respectively. These compounds showed strong hydrogen bonding and hydrophobic interactions. The ADME analysis confirmed their favorable pharmacokinetic profiles.

Conclusion: This study identified three natural compounds with significant PD-L1 inhibitory potential, suggesting their promise for future cancer therapies.

Keywords:

PD-L1, cancer, Surflex, molecular docking, inhibitor, EANPDB.

Introduction

Cancer remains one of the leading causes of death worldwide, driving the search for more effective treatments. Immunotherapy, particularly the modulation of immune checkpoints, has transformed cancer therapy. The PD-1/PD-L1 axis plays a critical role in tumor immune evasion by suppressing the immune response.

Monoclonal antibodies such as Atezolizumab have shown promise by blocking this axis. However, the need to develop new inhibitors, particularly from natural sources, is crucial to enhance treatment efficacy.

Our study aims to identify natural molecules capable of inhibiting the PD-1/PD-L1 interaction using molecular docking.

Material and Methods

Software Reliability Tests for Surflex

→ **RMSD:** Evaluated on 100 protein-ligand complexes (PDB).

→ **Visual Analysis:** Conducted to ensure docking accuracy.

Virtual Screening with Surflex:

Performed on a dataset of 1820 natural compounds from EANPDB against 5NIU.

Interaction Studies:

Using Biovia Discovery to analyze ligand-protein binding.

Pharmacological Properties:

Predicted using SwissADME

Results

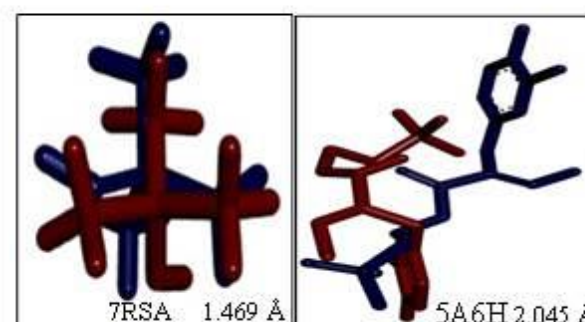
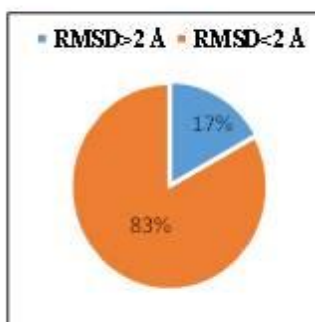


Figure1. RMSD.

Figure 2. Visual analysis.

Table 1: Ranking and affinity of the top three PD-L1 inhibitors.

No.	Compounds	Affinity (M ⁻¹)
1	S_347: 4'-O-geranylisoriquiritigenin	6.12
2	S_136: 2-(p-hydroxy-3-(3-methylbut-2-en-1-yl)benzyl)benzofuran-6-ol	5.42
3	S_175: 2,5-dihydroxy-3-methyl-6-undecyl-1,4-benzoquinone	5.35

Table 2: Summary of the scores and interaction counts.

Compounds	8YZ	S_347	S_136	S_175
Score (M ⁻¹)	1.73	6.12	5.42	5.35
N H Bonds	1	1	2	2
N C-H Bonds	0	0	0	0
N Hydrophobic Interactions	8	12	9	13
Interactions with the Receptor Binding Site	Tyr56, Met115, Ala121	Ile54, Met115, Tyr123, Tyr56, Ala121	Asp122, Ile54, Met115, Tyr123, Tyr56, Ala121	Tyr123, Ala121, Met115, Ile54, Asp122
Total	9	13	11	15

Table 3: Physicochemical and pharmacokinetic properties.

Properties	8YZ	S_347	S_136	S_175
Lipinski's Rule	Yes	Yes	Yes	Yes
Veber's Rule	No	Yes	Yes	Yes
Water Solubility	Moderate	Low	Moderate	Moderate
Synth. Accessibility	4.92	3.63	3.36	3.77
GI Absorption	Low	High	High	High
BBB Permeability	No	No	Yes	No
CYP Inhibition	Yes	Yes	Yes	Yes

Discussion

-The higher affinity scores and favorable physicochemical and pharmacokinetic properties suggest promising inhibitory potential.

-CYP inhibition profiles emphasize the need for further optimization.

Conclusion

-The three proposed natural compounds are promising candidates due to their pharmacokinetic profiles.

-Further validation is required to confirm their efficacy.

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2. Sharon, E., Moore, N., Foster, J. C., Ph, D., Hu, J. S., & Riedel, R. F. (2024). Atezolizumab for Advanced Alveolar Soft Part Sarcoma. 389(10), 911–921.

Abstract

Background: The aim of this study was to evaluate diffusion method for determining the antibacterial activity of plant extracts.

Methods: The different plant extracts were tested against selected gram-positive and gram-negative pathogenic bacteria with the disk diffusion.

Results: The findings showed that the methanol and hydromethanol extracts exhibited varying degrees of antibacterial activity against the tested pathogenic bacteria. Interestingly, *Helianthemum apenninum* showed the highest inhibition against multidrug-resistant bacteria at 10 mg/ml. Ethyl acetate and methanol extracts obtained from *Rochelia disperma* displayed also significant antimicrobial properties against pathogens such as *Citrobacter freundii*, *Pseudomonas aeruginosa*, *Proteus mirabilis* and *Listeria monocytogenes*.

Conclusion: *Helianthemum apenninum* and *Rochelia disperma* extracts had the ability to inhibit bacterial growth. The antibacterial activity differs with the applied extractive method, and it could be partially attributed to phenolic compounds. This study contributes to the knowledge of antibacterial capacity of plants from Algeria.

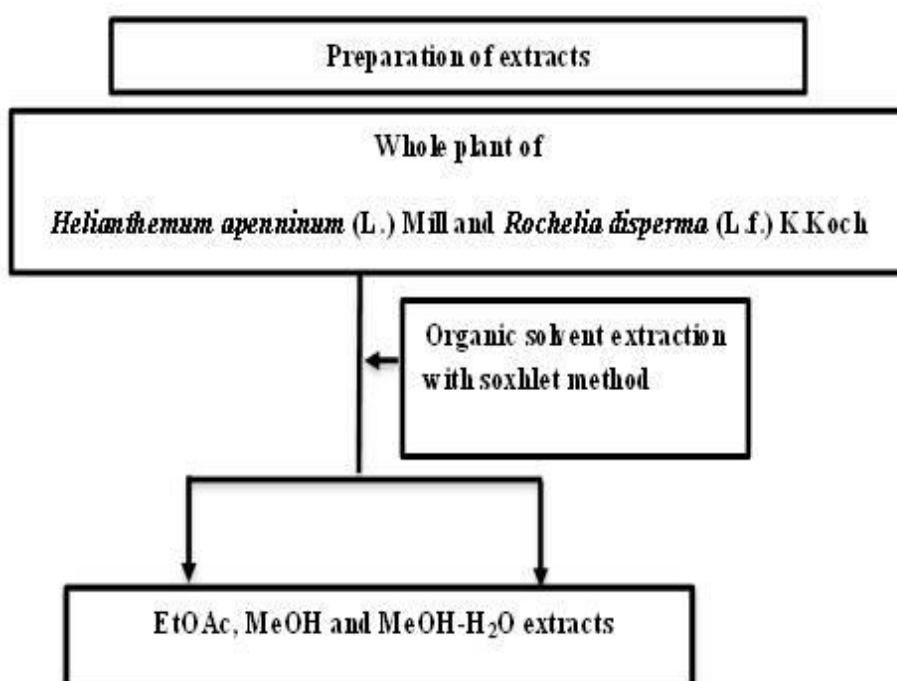
Keywords:

Antimicrobial agents, plant extracts, phytochemicals, pathogenic bacteria, *Listeria monocytogenes*

Introduction

- Recent studies highlight the effectiveness of natural compounds like alkaloids and flavonoids from plants against resistant strains, indicating a promising avenue for developing new antibacterial treatment [1]. Understanding these mechanisms is crucial for addressing antibiotic resistance and enhancing therapeutic strategies inhibitors [2].
- Helianthemum apenninum* (L.) and *Rochelia disperma* are wild Algerian plants that live in arid desert areas.

Material and Methods



Antimicrobial assay:

The agar well diffusion method is a widely used technique for evaluating antibacterial activity. In this method, a standardized microbial inoculum (0.5 Mack Ferland approximate cellular density 1.10⁸ UFC/ml) of a negative Gram bacteria: *Citrobacter freundii* ATCC 8090, *Proteus mirabilis* ATCC 35659 and a positive Gram bacteria: *Listeria monocytogenes* ATCC 15313 is spread uniformly across an agar plate (Muller-Hinton medium). Wells are then created in the agar using a sterile cork borer, and 40 µL of the extract is added to each well. After incubation for 24 h at 35°C, the agent diffuses through the agar, creating a concentration gradient that inhibits bacterial growth, resulting in a zone of inhibition around the well. The diameter of this zone is measured to determine susceptibility or resistance to the antimicrobial agent [3].

Results

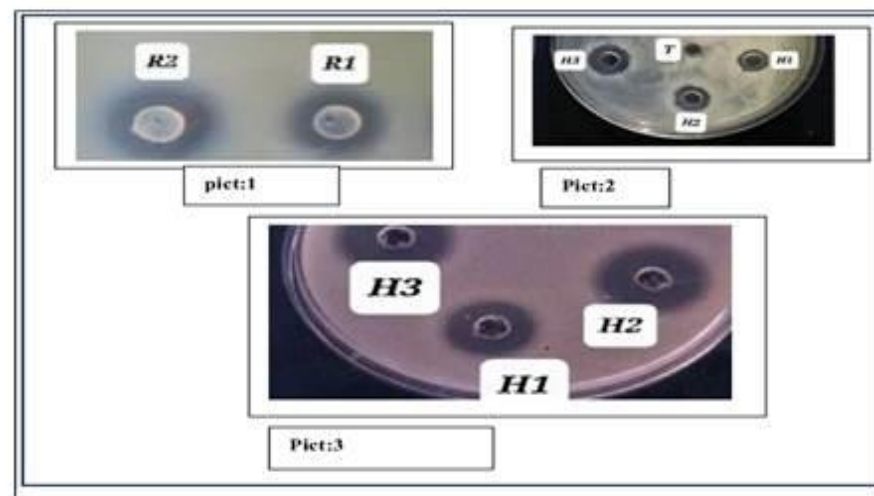


Figure 1. Pict:1 *Citrobacter freundii* ATCC 8090 antibiogram with *Rochelia disperma* (R1) EtOAc, and (R2) MeOH Extracts. Pict:2 *Listeria monocytogenes* ATCC 15313 antibiogram with *Helianthemum apenninum* (L.) (H1) EtOAc, (H2) MeOH, (H3) MeOH-H₂O Extracts. Pict:3 *Proteus mirabilis* ATCC 35659 antibiogram with *Helianthemum apenninum* (L.) (H1) EtOAc, (H2) MeOH, (H3) MeOH-H₂O Extracts.

Table 2: Antibacterial activity of *Helianthemum apenninum* (L.) Mill and *Rochelia disperma* (L.f.) K.Koch extracts. Results are expressed as zone of inhibition values (Cm).

Plant extracts		Zone of inhibition (Cm)					
		<i>Helianthemum apenninum</i> (L.) Mill			<i>Rochelia disperma</i> (L.f.) K.Koch		
		EtOAc	MeOH	MeOH H ₂ O	EtOAc	MeOH	MeOH H ₂ O
Positive Gram bacteria	<i>Listeria monocytogenes</i> ATCC 15313	09.1±0.40	10.5±0.30	12.0±0.1	09.2±0.5	Not active	08.±0.2
Negative Gram bacteria	<i>Citrobacter freundii</i> ATCC 8090	Not active	08.50±0.4	09.3±0.5	10.0±0.7	12.5±0.60	Not active
	<i>Proteus mirabilis</i> ATCC 35659	09.00±0.5	10.80±0.2	12.1±0.3	08.5±0.2	Not active	Not active

The findings showed that the methanol and hydromethanol extracts exhibited varying degrees of antibacterial activity against the tested pathogenic bacteria. Interestingly, *Helianthemum apenninum* showed the highest inhibition against multidrug-resistant bacteria at 10 mg/ml. Ethyl acetate and methanol extracts obtained from *Rochelia disperma* displayed also significant antimicrobial properties against pathogens such as *Citrobacter freundii*, *Pseudomonas aeruginosa*, *Proteus mirabilis* and *Listeria monocytogenes*.

Conclusion

Helianthemum extracts exhibit notable antibacterial activity. This study indicates that both ethanol and methanol extracts can inhibit bacterial growth at concentrations of 10 mg/ml. Additionally, extracts from *Rochelia disperma* (L.f.) K.Koch show promising antimicrobial properties, suggesting their potential in therapeutic applications. The presence of polyphenolic compounds in these extracts contributes significantly to their antibacterial effects [4]. Overall, *Helianthemum* extracts are considered valuable for developing new antimicrobial agents.

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Protein anti-denaturation activity of *Rosmarinus Officinalis*

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Abstract

Background: *Rosmarinus officinalis* belongs to the family of Lamiaceae and it is widely spread in different regions of Algeria. Many studies have shown a large set of vertus of this plant but few have interested in its anti-denaturation effect on proteins. The purpose of the present study is the to determine the protein anti-denaturation effect of *Rosmarinus officinalis* in different extracts.

Methods: *Rosmarinus officinalis* has been collected from Tiaret district during the month of April. Then, the plant was dried and grounded to prepare various extracts (aqueous, ethanolic and methanolic). Different concentrations of extracts have been tested on proteins. Ferric Reducing Antioxidant Power Assay (Frap) was also determined.

Results: Our results showed that *Rosmarinus officinalis* extracts have different degrees of proteins anti-denaturation activity.

Conclusion: These results are very promising, prompting us to look for other unevaluated effects of this plant, which is widely distributed throughout Algerian vegetation.

Keywords:

Rosmarinus officinalis, protein anti-denaturation activity, extracts, Tiaret.

Introduction

Rosmarinus officinalis is a member of the Lamiaceae family and is extensively distributed in various regions of Algeria. It offers a variety of benefits due to its rich phytochemical composition as antioxidant proprieties, anti-Inflammatory effects, antimicrobial effects...

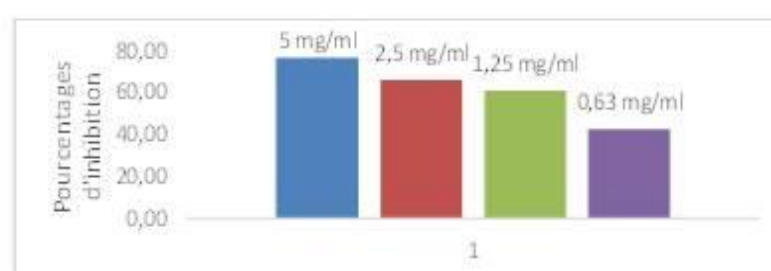
Material and Methods

Rosmarinus officinalis has been collected from Tiaret district during the month of April. Then, the plant was dried and grounded to prepare various extracts (aqueous, ethanolic and methanolic). Different concentrations of extracts have been tested on proteins.

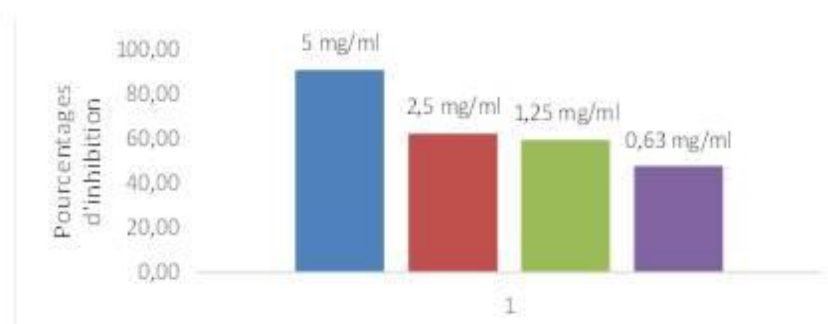
Results



Protein anti-denaturation activity of aqueous extract



Protein anti-denaturation activity of methanolic extract



Protein anti-denaturation activity ethanolic extract

Protein denaturation poses a significant threat to organisms, leading to detrimental changes in both structure and function. The current research demonstrated notable inhibitory effects of the extracts, with the ethanolic extract showing the strongest activity, followed by the methanolic and aqueous extracts.

Discussion

Conclusion

These results are very promising, prompting us to look for other unevaluated effects of this plant, which is widely distributed throughout Algerian vegetation.

References

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Impact of preservatives on the physico-chemical stability of metronidazole gel

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Abstract

Rosacea is a chronic inflammatory disease characterized by the occurrence of facial redness, erythema, papules, pustules and in severe cases, phymatous changes such as rhinophyma. Treatment depends on severity and mainly includes topical metronidazole preparations. Gels of metronidazole are frequently used. The aim of this study is to formulate gels with metronidazole (MZ) 1% with long stability and to choose an appropriate conservative substance. Gels were formulated with two kinds of conservative: Methylparaben (MB) and Ethylene diamine tetra-acetic acid (EDTA). For a month, the stability of gels was investigated with the evolution of the conductivity, pH and spectroscopic analyze. The formulation with Methylparaben was the most stable gel physically and chemically.

Keywords:

Metronidazole, gel, Methylparaben, EDTA

Introduction

Metronidazole gels are used to treat many topical diseases. The stability of metronidazole gel can be affected by many factors like: light, high temperature, etc. The composition of formulas are very important to maintain their stability, the influence of conservative substance was studied in this work. Gels with metronidazole 1% were formulated and their stability were investigated. The gels were composed of carbopol 935 and one of two conservatives EDTA or Méthylparaben with metronidazole active substance.

Material and Methods

A metronidazole gel was formulated with carbopol 935 and one of the two preservatives Methylparaben and EDTA was added. The duration of this study was one month. Preservatives were used to study their influence on the properties of metronidazole gels at time 0 and after 30 days at room temperature. The composition of formulas was:
Metronidazole.....1%
Carbopol 935.....0,6 %
Méthylparaben or EDTA0,1%
NaOH 0,1 N.....10 droplets
Distilled water.....100%
Gels were controlled by measuring pH, conductivity and infrared spectroscopy.

References

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Results

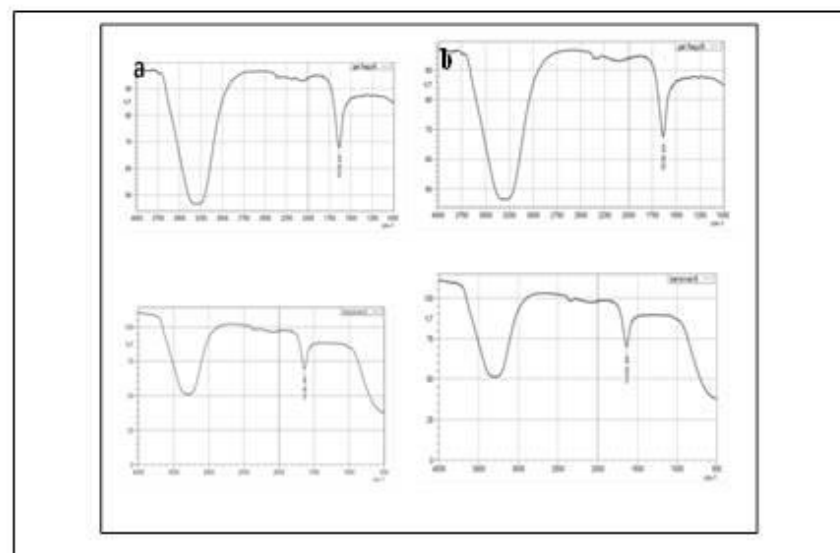


Figure1. Spectroscopic profiles gels at day 0 and day 30(D) a: with Methylparaben, b: with EDTA

Table1: Conductivity evolution by the time (1 month)(μS)

Gels	D0	D3	D7	D10	D20	D30
MZ	21,72 $\pm$ 0,09	23,26 $\pm$ 0,09	22,1 $\pm$ 0,04	21,1 $\pm$ 0,04	21,46 $\pm$ 0,09	21,2 $\pm$ 0,5
MZ+ MB	21,7 $\pm$ 0,05	17,12 $\pm$ 0,04	21,4 $\pm$ 0,06	19,34 $\pm$ 0,02	20,18 $\pm$ 0,02	21 $\pm$ 0,1
MZ + EDTA	19,26 $\pm$ 0,04	21,52 $\pm$ 0,08	18,99 $\pm$ 0,05	23 $\pm$ 0,05	21,73 $\pm$ 0,07	22,2 $\pm$ 0,08

Table2: pH evolution by the time (1 month)

Gels	D0	D3	D7	D10	D20	D30
MZ	5,32 $\pm$ 0,05	5,3 $\pm$ 0,01	5,27 $\pm$ 0,01	5,25 $\pm$ 0,01	5,41 $\pm$ 0	5,28 $\pm$ 0,005
MZ+ MB	5,32 $\pm$ 0,01	5,32 $\pm$ 0,005	5,28 $\pm$ 0,005	5,29 $\pm$ 0	5,41 $\pm$ 0	5,3 $\pm$ 0,005
MZ + EDTA	5,01 $\pm$ 0,02	4,91 $\pm$ 0,005	4,85 $\pm$ 0,02	4,82 $\pm$ 0,01	4,92 $\pm$ 0	4,82 $\pm$ 0

Discussion

The monitoring of conductivity over a period of 30 days did not show a significant difference for all gels with $p > 0,05$, $p = 0,801$ for gels without preservative, $p = 0,073$ for gels with methylparaben, and $p = 0,57$ for gels with EDTA, the conductivity of all preparations were stable.

The pH preparations were between 4,82 to 5,32. The pH of EDTA gels were lower than the pH of other preparations. This pH has decreased during the shelf life (1 month at room temperature). The most appropriate pH was obtained with methyl paraben. pH monitoring over a period of 30 days did not show a significant difference for gels without preservative and those with methyl paraben with $p > 0,05$, ($p = 0,546$, $p = 1$ respectively), however gels with EDTA showed a significant difference $p = 0 < 0,05$, this can be relate to the acidic nature of EDTA. Consequently, it can influence the stability of metronidazole molecule and cause incompatibility with pH skin.

the spectroscopic profiles shown two peaks with same intensity for all metronidazole preparations at t_0 (1636,44 cm^{-1} , 3313,07 cm^{-1}) and after storage for 30 days in room temperature (1636,44 cm^{-1} , 3295,84 cm^{-1}) with $p = 0,99 > 0,05$ for peaks and $p = 0,846 > 0,05$ for intensity, without significant difference.

Conclusion

Metronidazole gels with methylparaben were more stable than gels with EDTA. Methyl paraben is the preservative of choice to maintain physicochemical stability of metronidazole gels.

Screening for Phosphatidylinositol 3-kinase alpha PI3K inhibitors for Anticancer Purposes by Reverse Screening, Molecular Docking and ADMETox Studies

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Khairredine Kraim³, Abdelhak Neghra¹, Foued Ferkous³

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Abstract

The phosphatidylinositol-3-kinase (PI3K) pathway is one of the most frequently mutated oncogenic pathways in human cancers. The efficacy of PI3K inhibitors is mainly limited by their narrow therapeutic window and frequent treatment-related toxicities. Currently, copanlisib and duvelisib are the only two PI3k inhibitors that have been approved for clinical use. In this poster, we intend to report results of the docking-based virtual screening of molecules similar to natural components of *Pistacia lentiscus* seed oil.

Keywords:

Docking, Virtual screening, Reverse Screening, PI3K, ADMETox, Stigmasterol

Introduction

Over the past three decades, more than 80% of anticancer drugs placed on the market have been derived from medicinal plants or inspired by the extraordinary properties of the plant kingdom. CADD methods help to make the most of this gold mine

Material and Methods

=The Netinifer prediction server was used to predict the target for a large number of natural compounds of *Pistacia lentiscus* seed oil namely fatty acids (palmitic, stearic, linoleic, palmitoleic), sterols (campesterol, stigmasterol, stigmatanol, B-sitosterol), polyphenols (protocatechic acid) and antioxidants (chlorophyll).

=Similar of natural compounds were downloaded from Pubchem database. Glide of Maestro 13.5 was used for the preparation and Discovery studio filtered them by applying Lipinski and Veber rules.

=The docking was done with the Molegro Virtual Docker (MVD) in the protein selected. This one was also prepared with the SPDB Viewer. Before this, the software was validated by calculating the RMSD.

=Pharmacokinetic and toxicological properties of hits collected after docking (ADMETOX) were studied with the pkCSM.

Most of the targets predicted by reverse screening using Netinifer server are targets involved in various types of cancers. We chose the target that interact with most natural compounds: PI3K α . The pdb used is 4L23 (resolution 2.5Å), RMSD was 0.28, with Moldock score of -109kcal/mol and HB energy of -5 kcal/mol. Best similar retained after docking and ADMT studies was 67426622, with Moldock score of -118.5 kcal/mol and HB energy of -10.32 kcal/mol. It is similar of Stigmasterol. This natural product showed a score of -118.505 kcal/mol but no HB interaction was observed. Stigmasterol, although it has less affinity for PI3k, is better tolerated compared to its similar 67426622 (best maximum tolerated dose). Both compounds are well absorbed, have a good volume of distribution, do not inhibit any cytochrome p450 and are not substrates of OCT2. A risk of cardiac toxicity is nevertheless predicted with stigmasterol by inhibition of hERG receptors.

Table1: Pharmacokinetic properties of the hit 67426622

Setting	Absorption HIA	Distribution VDss	Metabolism Cyp A2, 2C19, 2C9, 2D9, 3A4	Elimination OCT2substrat
Standards	≤90	>-0.15	No	No
Result 67426622	90.10	0.14	No	No
Stigmasterol	94.97	0.178	No	No

Table2: Toxicological properties of the hit 67426622

	Ames	Cardiac toxicity	Hepatic toxicity	Max tolerated dose (logng/kg/day)
Result 67426622	No	No	No	-1.567
Stigmasterol	No	Yes	No	-0.664

Discussion

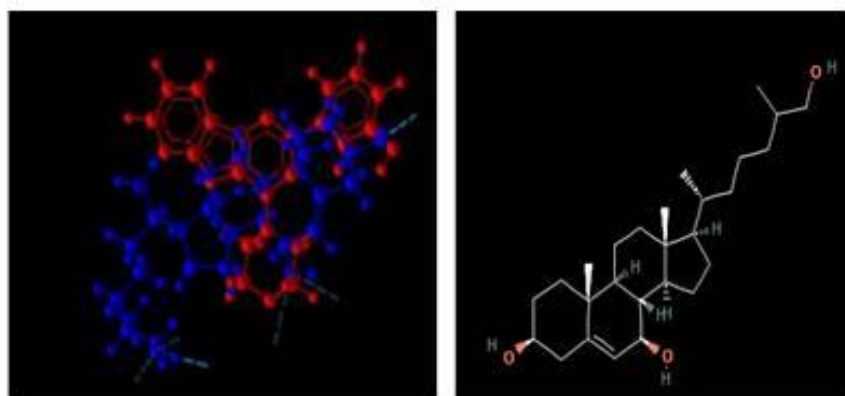
Reverse screening was performed to predict targets that react with the most active compounds of *Pistacia lentiscus* and to confirm biological effects of this plant including anticancer activity. Most of predicted targets are involved in various types of cancers. The solid tumor target PI3K α was chosen, which interacts with most natural compounds. We had poor hydrogen bond energies for the natural compounds, but the similar ones established good interactions with key amino acids and showed a suitable ADMET profile.

Conclusion

MD simulations must be applied because they give a more precise description of the mechanism and thus provide more reliable and comparable approximations with in vitro experimental results.

References

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Results

Figure1. Superposition of the reference ligand X6K and hit67426622 with MVD (left) and structure of hit 67426622 (right)

Protective, immunomodulatory and anti-inflammatory effect of *Echinococcus granulosus*' laminated layer in a mouse model of ovalbumin-induced asthma

Sara Benazzouz, Manel Amri, Fahima Ameur, Insaf-Meriem Boutemine, Imene Soufi, Houba Belguendouz and Chafia Touil-Boukoffa

Team: «Cytokines et NO Synthases : Immunité et Pathogénèse, LBCM, FSB, USTHB, Alger. manelamri@yahoo.fr

Abstract

Background: Asthma is an inflammatory disease of the airways characterized by an excessive type 2 immune response. Our team have also highlighted the anti-inflammatory effect of the helminth *Echinococcus granulosus* and its laminated layer (LL, outer layer of the cyst) during chronic inflammatory pathologies. In this sense, the aim of our study was to investigate the effect of LL during an experimental model of asthma.

Methods: We developed an experimental model of asthma induced by ovalbumin in female Balb/c mice and subsequently treated simultaneously with LL. We measured the level of specific anti-OVA IgE and nitrites. The lungs were used for histological study with H&E and PAS staining. In addition, the study of cytokines and transcription factor expression by quantitative RT-PCR was carried out in the lung and spleen.

Results: Our results showed that treatment with LL decrease the levels of allergen-specific IgE and nitrites, as well as improved the histological appearance, inflammatory cells infiltration and hyperplasia of the goblet cells in the lungs. In addition, the expression of effector cytokines was significantly increased in the lung (IL-1 β , IL-17A, IL-4) and spleen (IFN- γ , IL-1 β , IL-17A). However, this expression was significantly reduced by LL, in the lung (IL-1 β) and in the spleen (IFN- γ , IL-1 β , IL-17A). Interestingly, mRNA levels of Foxp3, IL-10 and TGF- β were significantly up-regulated in the lung and spleen after treatment with LL.

Conclusion: Our data confirm the immunomodulatory and therapeutic effect of *Echinococcus granulosus*' LL and show the value of using LL as adjuvant therapy in inflammatory and allergic pathologies.

Keywords: Experimental model of asthma, *Echinococcus granulosus*, Laminated layer, Immunomodulatory effect, Therapeutic effect.

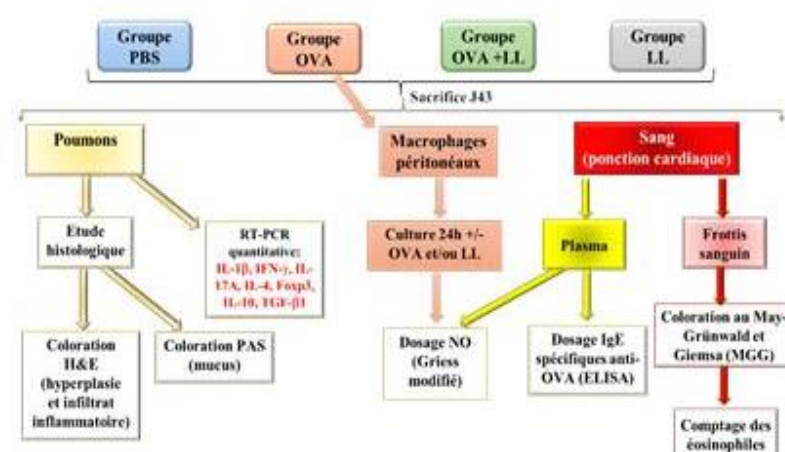
Introduction:

Les travaux de notre équipe en mis en évidence les effets anti-inflammatoires et immuno-régulateurs de la membrane lamellaire (LL, couche externe acellulaire du kyste hydatique de *Echinococcus granulosus*). Plusieurs études épidémiologiques rapportent l'existence d'une corrélation inverse entre l'incidence de certaines maladies allergiques, inflammatoires et auto-immunes et l'exposition aux helminthes.

Et si l'exposition à des helminthes ou à leurs dérivés produisait un effet protecteur et/ou curatif contre certaines allergies et maladies inflammatoires chroniques?

BUT: Evaluer l'effet immunomodulateur et protecteur de la LL au cours d'un modèle d'asthme expérimental induit par l'ovalbumine.

Material and Methods



Conclusion

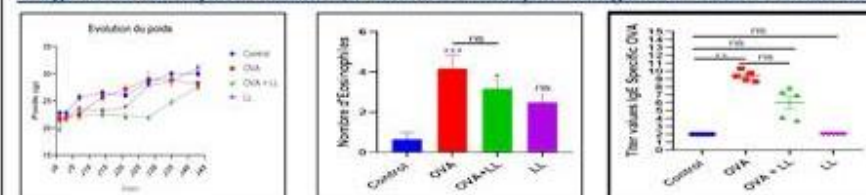
La LL réduit l'infiltrat inflammatoire, la production de mucus et l'expression des cytokines pro-inflammatoires au niveau pulmonaire et celle du NO au niveau systémique au cours de l'asthme induit par l'ovalbumine.

A l'opposé, la LL augmente l'expression des cytokines régulatrices et le facteur de transcription des Treg.

Nos données confirment l'effet immunomodulateur de la LL et montrent l'intérêt de l'utiliser (elle ou l'un de ses composants) comme traitement adjuvant dans les pathologies inflammatoires et allergiques.

Results

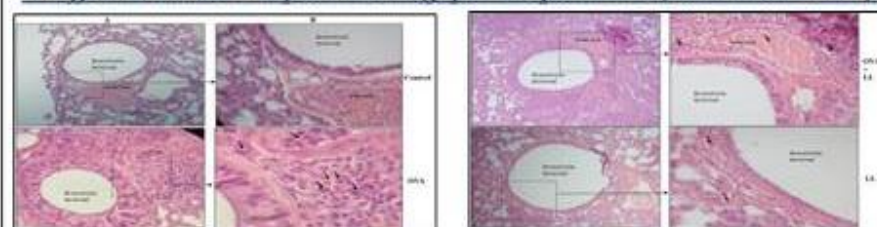
1/ Effet de LL sur le poids des souris, le nombre d'éosinophiles sanguins et le taux d'Ac anti-OVA



➤ L'OVA n'a aucun effet sur le poids des souris, augmente le nombre d'éosinophiles sanguins et le taux d'Ac IgE spécifiques à l'ova.

➤ La LL n'a aucun effet sur les 3 paramètres.

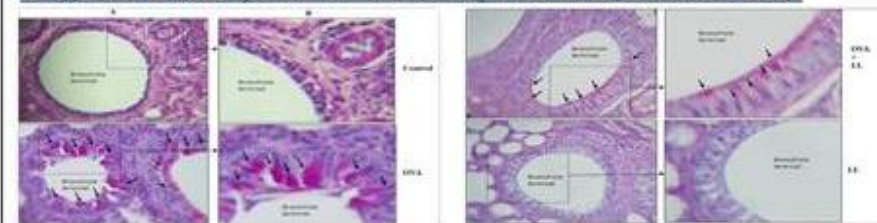
2/ Effet de LL sur l'aspect histologique des poumons (coloration H&E)



➤ L'OVA augmente l'infiltrat inflammatoire au niveau pulmonaire (coupe au niveau des bronchioles et artérioles et l'artère pulmonaire).

➤ La LL réduit cet infiltrat.

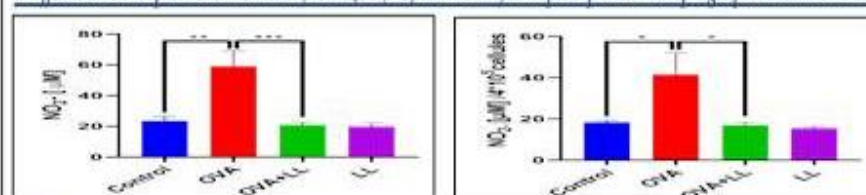
3/ Effet de LL sur la production de mucus pulmonaire (coloration PAS)



➤ L'OVA augmente la production du mucus et de l'hyperplasie des cellules caliciformes au niveau pulmonaire (coupe au niveau des bronchioles terminales).

➤ La LL réduit cette production.

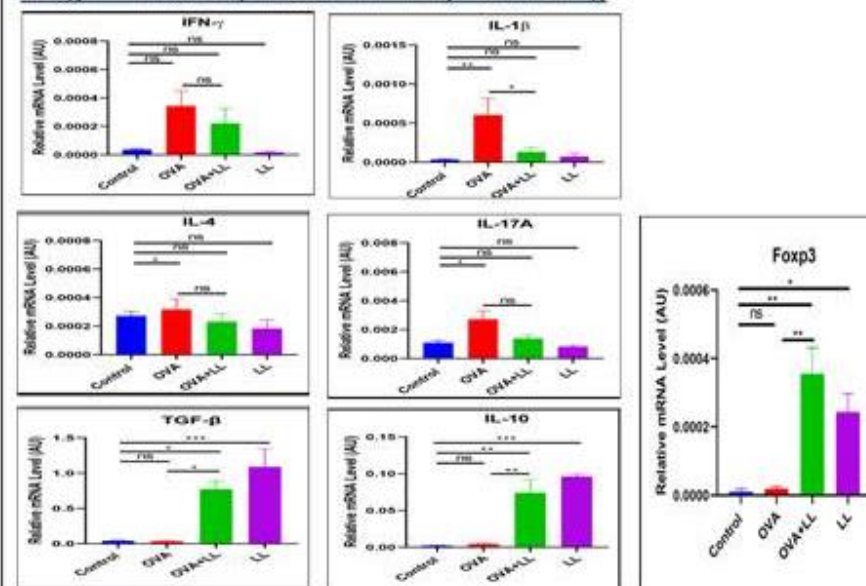
4/ Effet de LL sur la production de monoxyde d'azote (NO) au niveau systémique et par les macrophages péritonéaux en culture



➤ L'OVA augmente la production du NO plasmatique et au niveau des cultures de macrophages péritonéaux au cours de l'asthme induit par l'ovalbumine.

➤ La LL réduit cette production.

5/ Effet de LL sur l'expression pulmonaire des cytokines pro-inflammatoires et régulatrices et le facteur de transcription des Treg



➤ L'OVA augmente l'expression pulmonaire de l'IFN- γ , l'IL-1 β , l'IL-4 et l'IL-17A.

➤ La LL réduit l'expression pulmonaire de l'IFN- γ , l'IL-1 β et l'IL-17A et augmente celle du TGF- β , l'IL-10 et le Foxp3.

Antimicrobial activity of some Algerian medicinal plants extract against pathogenic microbial strains

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Abstract

Background: The naturally derived products play an important role as a source of medicine. The development of antibiotic resistances among infectious microbial strains led to the search of new antimicrobial agents mainly among plant extracts. The study aimed to determine the antimicrobial activity of three medicinal plants (*Clematis cirrhosa* L., *Olea europaea* subsp. *laperrinei*, *Rhus pentaphylla*) against some microorganisms pathogenic strains.

Methods: The ethyl acetate and the methanolic extracts of *Clematis cirrhosa* L., *Olea europaea* subsp. *laperrinei*, *Rhus pentaphylla* were subjected to a test of their antimicrobial properties by disc diffusion method. The solvent (ethyl acetate and methanol) extract of plant were prepared by the cold maceration method. The antimicrobial potential of the prepared plant extracts was screened against nine pathogenic bacteria reference strains and one yeast reference strain *Candida albicans*.

Results: The result indicated that the plant extracts showed zone of inhibition ranging from 06.43 to 13.67 mm against one or more tested strains. The ethyl acetate extract showed an antimicrobial activity in the majority of tests. The highest potential was observed in the ethyl acetate extract of *Olea europaea* subsp. *laperrinei* against *Bacillus cereus*, *B. subtilis*, *Staphylococcus aureus*, *Bscherchia coli* and *Proteus mirabilis* with zone of inhibition (ZOI) of 13.67 mm, 10.47 mm, 8 mm, 11 mm, and 11.17 mm, respectively.

Conclusion: The experiment indicated the efficacy of the *Olea europaea* subsp. *laperrinei* extract as natural antimicrobials and suggested the possibility of employing them in drugs for the treatment of infectious diseases caused by the test organisms.

Keywords:

Methanol extract, Ethyl acetate extract, medicinal plants, antimicrobial activity, inhibition zone

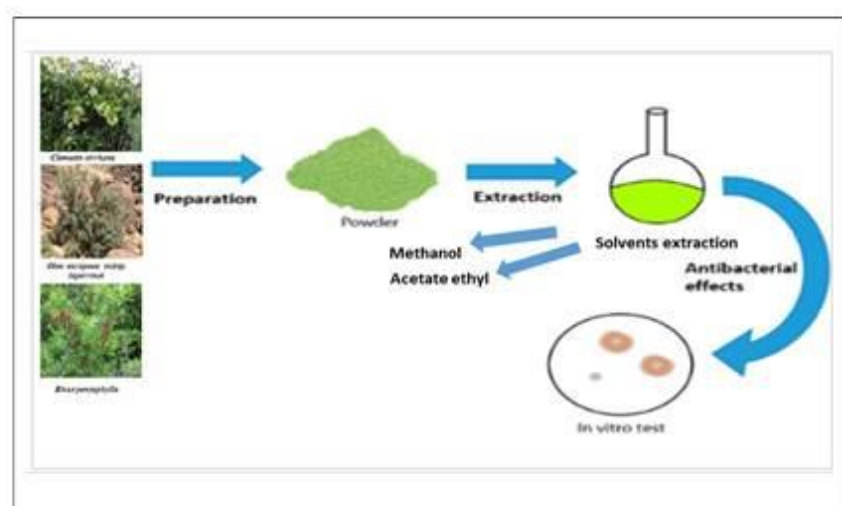
Introduction

Many plants have been used because of their antimicrobial traits, which are due to phytochemicals synthesized in the secondary metabolism of the plant (Manandhar et al 2019).

This source of a natural antimicrobial compounds can potentially be effective in the treatment of these problematic bacterial infections with an increase in the resistant to antibiotics (Tajehmiri et al. 2018).

Therefore, as reported in this study, we determined the antimicrobial activities of extracts of three medicinal plants (*Clematis cirrhosa* L., *Olea europaea* subsp. *laperrinei*, *Rhus pentaphylla*) against some microorganisms pathogenic strains.

Material and Methods



Results

Table: The antimicrobial activity of the ethyl acetate and the methanolic extracts of *Clematis cirrhosa* L., *Olea europaea* subsp. *laperrinei*, *Rhus pentaphylla*

	Tested strains	Cle. Ace	Cle. Met	Ole. Ace	Ole. Met	Rus. Ace	Rus. Met
Gram +	<i>Bacillus cereus</i> ATCC	-	-	13.67	8.38	8.15	-
	<i>Bacillus subtilis</i> ATCC 6633	-	-	10.47	-	8.15	-
	<i>Enterococcus faecalis</i> ATCC 49452	7.38	-	-	-	-	-
	<i>S. aureus</i> ATCC 29292	-	-	8	-	-	-
	<i>Listeria innocua</i> ATCC	-	-	-	-	-	-
	<i>Proteus mirabilis</i> ATCC 35659	6.43	7.22	11.17	10.29	8.54	6.54
Gram -	<i>Citrobacter freundii</i> ATCC 8090	-	-	-	-	-	-
	<i>P. aeruginosa</i> ATCC 27853	-	-	-	-	-	-
	<i>E. coli</i> ATCC 25922	-	11	11	-	-	-
Yeast	<i>Candida albicans</i> ATCC 10231	13.17	7.42	-	-	+	+

(+) Positive (-) Negative.

Conclusion

Our results shows that the plant extract possess microbial activity against tested organisms. The zone of inhibition varied suggesting the varying degree of efficacy on the target organism. The antimicrobial activity of the plants may be due to the presence of various active. Further studies are needed to isolate and characterize the bioactive principles to develop new antimicrobial drugs.

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5-amino-salicylic acid protects colonic mitochondria by attenuating oxidative mitochondrial dysfunction in TNBS-induced colitis

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Abstract

Background: Crohn's disease (CD) is a complex, chronic and recurring inflammation of the gastrointestinal tract with unknown etiology. The role of mitochondrial dysfunction in CD is still being investigated.

→ This study evaluated the beneficial effect of 5-aminosalicylic acid (5-ASA), a first-line drug in CD, in trinitrobenzene sulfonic acid (TNBS)-induced oxidative mitochondrial dysfunction, in BALB/c mice.

Methods: Mitochondrial toxicity and redox status were evaluated in colonic mitochondria isolated from TNBS-treated mice 7 days post-colitis induction.

Results: Compared to control, Mitochondria (mt) isolated from TNBS-treated mice showed a twofold (2-fold, ***P < 0.001) increase in matrix swelling, associated with elevated lipid peroxidation (mtmalondialdehyde, mtMDA; 3-fold, ***P < 0.001) and superoxide anion generation (mtO₂⁻; up to 4-fold, ***P < 0.001). Concomitantly, aconitase and mitochondrial superoxide dismutase (mtSOD) activities were decreased by 64% and 42% (**P < 0.01) respectively. However, 5-ASA attenuated TNBS-oxidative damage in the colonic mucosa. It decreased mtMDA levels (67%; **P < 0.001), mitochondrial swelling (85%; **P < 0.001) and mtO₂⁻ (40%; **P < 0.01), resulting in restored mtSOD (3-fold; **P < 0.001) and aconitase (2.2-fold; *P < 0.05) activities.

Conclusion: Our results showed that mitochondria may serve as a novel pharmacological target in the treatment and prevention of IBD.

Keywords:

Crohn disease, oxidative stress, mitochondrial dysfunction, 5-ASA.

Introduction

Crohn's disease (CD) is a typical inflammatory bowel disease (IBD) characterized by chronic intestinal oxidative inflammation associated to imbalanced immune tolerance [1].

Mitochondria are membrane-bound organelles that maintain bioenergetic homeostasis through oxidative phosphorylation (OXPHOS). Mitochondrial dysfunction has been suggested as a predisposing factor in CD [2].

→ This study evaluated the beneficial effect of 5-aminosalicylic acid (5-ASA), a first-line drug in CD, in trinitrobenzene sulfonic acid (TNBS)-induced oxidative mitochondrial dysfunction, in BALB/c mice.

Material and Methods

Colon mitochondria from fresh colon tissues of mice treated with 30% ethanol (control), TNBS (60 mg kg⁻¹ in 30% ethanol, intrarectal instillation, ir. (TNBS group), or TNBS+5-ASA (100 mg kg⁻¹, intra-peritoneal, ip; ASA group) were assayed for Superoxide anion release (mtO₂⁻); malondialdehyde (mtMDA) levels; mitochondrial swelling; Aconitase activity and superoxide dismutase activity (mtSOD).

Results

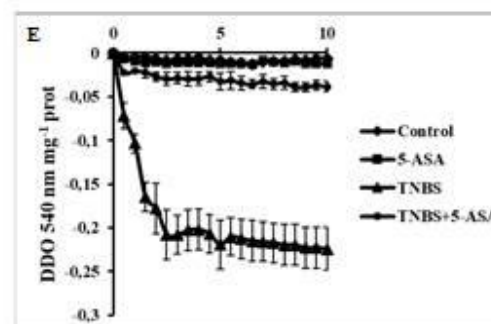
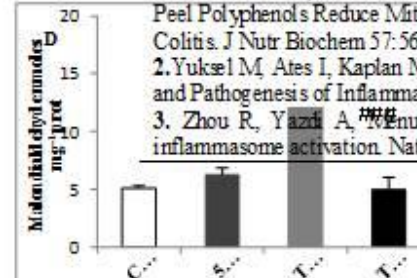
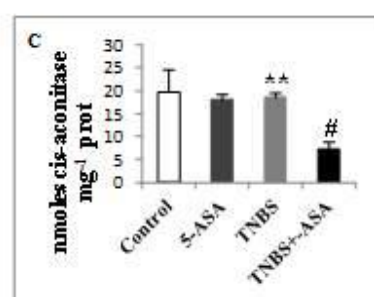
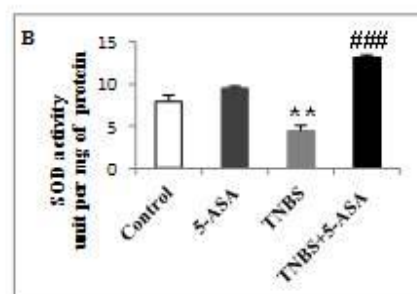
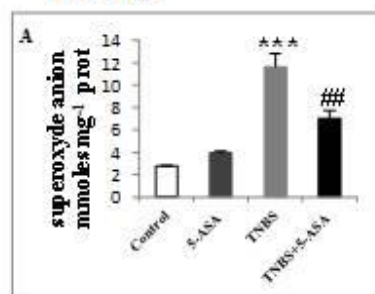


Figure 1. 5-ASA attenuated mitochondrial injury and oxidative damage in TNBS-induced colitis. Data are expressed as means ± S.E.M, n=9 mice in each group, ** (P < 0.01); *** (P < 0.001) versus control group, and # (P < 0.05); ## (P < 0.01); ### (P < 0.001) versus TNBS-treated group.

Mitochondria isolated from TNBS-treated mice showed a significant increase in oxidative stress markers. As Compared to control, TNBS resulted in a remarkable increase in superoxide anion production (up to 4-fold) (***P < 0.001) (Fig. 1A) and a decrease of 42% (**P < 0.01) in mtSOD activity (Figs. 3B).

This oxidative stress was accompanied by high levels of mitochondrial damage markers as evidenced by increased lipid peroxidation (mtMDA; 3-fold, ***P < 0.001) (Fig. 1D), and matrix swelling (2-fold, ***P < 0.001), as compared to control (Fig. 1E).

An alteration in mitochondrial morphology can lead to defective mitochondrial function. our results showed an important reduction of 64% (**P < 0.01) in aconitase activity (Figs. 1C).

In contrast treatment with 5-ASA was protective against oxidative stress. it restored mtSOD activity up to 3-fold (**P < 0.001) and neutralized 40% (##P < 0.01) of mtO₂⁻.

Concomitantly, 5-ASA inhibited efficiently mitochondrial swelling and lipid peroxidation in TNBS-treated mice by 85% and 67% respectively (**P < 0.001).

In addition, our results demonstrated that 5-ASA restored mitochondrial aconitase function by about 2.2-fold (*P < 0.05) compared to TNBS-treated mice.

Discussion

The exact mechanism by which mitochondrial stress potentiates intestinal inflammation is not clearly established. Our data showed that mitochondrial redox imbalance is intimately related to alterations in mitochondrial functions.

This mitochondrial impairment also disrupts energy metabolism, increase the intestinal epithelial barrier permeability and triggers inflammatory pathways, such as the activation of the NLRP3 inflammasome. These processes amplify intestinal inflammation [3].

The treatment with 5-ASA, a standard therapy for CD, has shown protective effects on mitochondrial function. 5-ASA reduces oxidative stress markers and modulates the antioxidant defense capacity.

Conclusion

Mitochondrial dysfunction contributes to oxidative stress and inflammation. By counteracting TNBS-induced oxidative damage, enhancing antioxidant defenses and improving mitochondrial function, → 5-ASA highlights the therapeutic potential of targeting mitochondria in CD treatment and prevention.

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Down syndrome: A cytogenetic study for some cases from Tlemcen region

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Abstract

Background: Down syndrome is the most common type of chromosomal abnormality found in newborns. It is associated with mental retardation and characteristic facial features. This study was conducted to validate the clinical diagnosis of probable cases of Down syndrome by cytogenetic analysis and to examine different risk variables associated with trisomy 21 in a group of patients from the western region of Algeria, Tlemcen.

Methods: This study was carried out on 22 patients with the clinical diagnosis of Down syndrome and 20 control subjects from the Psychomotor Centre for mentally handicapped children of Tlemcen (Maghnia- Souani) during 2013-2016. Karyotype analysis was performed in all cases. Two methods were used, GTG band and RTG band, according to the standard protocols.

Results: Of the 22 cases with Down syndrome, 20 cases (91%) were free trisomy 21. One case (4.5%) had translocation Down syndrome. Another case had mosaic Down syndrome. There was an excess of males over females. The mean maternal age at birth of the affected children was 36.27 ± 7.59 years. It was significantly higher than that of mothers of non-trisomic children (27.83 ± 6.34 years; $P = 0.0002$).

Higher parity was an important risk factor associated with trisomy 21; 81% of affected children were in the last or second last birth order. Paternal age and consanguinity had no effect.

Conclusion: It is crucial to identify certain chromosomal abnormalities in children with Down syndrome. It has been very beneficial in the management of these children.

Keywords:

Keywords: Cytogenetic, Down syndrome, Trisomy 21, karyotype, maternal age,

Introduction

Down syndrome (DS) is the most common autosomal anomaly and the most common genetic cause of mental retardation, affecting approximately 1 in 700 newborns¹. In one third of cases, the clinical diagnosis of Down syndrome may remain unproven. Three types of chromosomal abnormalities cause this syndrome: Trisomy 21, translocation, or mosaicism.

Most cytogenetic studies in the world indicate that the most frequent type of chromosomal abnormalities in DS is free trisomy 21 with frequency ranges from 93% to 96%, mosaic DS presents a frequency between 2% and 3%, and translocation DS presents a frequency ranges from 2% to 5%¹. In Algeria, the number of children with DS is about 80,000 cases².

The aim of this study was to describe the cytogenetic profile of children with DS in the western region of Algeria, Tlemcen, and to study the effect of maternal age and other risk factors associated with this disorder.

Material and Methods

Sample: This study was conducted on 22 patients with a clinical diagnosis of Down syndrome from the Psychomotor Centre for mentally handicapped children in Tlemcen (Maghnia-Souani) and 20 controls during 2013-2016. All cases were aged 1-19 years. All socio-demographic information was collected using a questionnaire.

Karyotype analysis: Chromosomes were prepared from 2 to 5 ml of peripheral blood. Peripheral blood lymphocytes were stimulated with phytohaemagglutinin-M (5 ng/ml) for 72 h in an incubator at 37°C. The metaphases were then harvested by adding colcemid (10 mg/l) for 2h, followed by hypotonic KCl (0.075 M) treatment for 30 min and fixation with 3:1 methanol-acetic acid. Finally, the cells obtained were dropped onto separate slides.

The karyotype of each patient was determined by direct staining with Giemsa or by G-banding using banding trypsin solution and Giemsa for staining (GTG) or by R-banding using phosphate buffer heated to 87°C followed by Giemsa for staining (RTG).

In each case, 25-50 metaphases were examined and the karyotype was described according to the ISCN³.

Statistical analysis: Data were analysed using SPSS 17.0 for Windows (SPSS Inc., Chicago, IL, USA).

Results:

Table 1: Karyotype analysis of Down syndrome cases

Karyotype	n	Percentage (%)
Regular trisomy 21		
47,XY,+21	12	54.54
47,XX,+21	8	36.36
Translocation DS		
46,XX,der(21:21)(q10;q10),+21	1	4.5
Mosaic DS		
47,XY,+21/46,XY	1	4.5
Total	22	100

DS = Down syndrome

Table2: Sociodemographic features of Down syndrome cases

Parameters	Values
Age of children (years)	
Mean $\pm$ SD	11.23 $\pm$ 4.12
Sex	
Male	13 (59.09)
Female	09 (40.90)
Birth order (%)	
First and second	04 (18.2)
Third and more	18 (81.8)
Maternal age at first birth (years)	
Mean $\pm$ SD	25.18 $\pm$ 5.13
Years of birth: 1974-1989	
Mean maternal age $\pm$ SD	22.7 $\pm$ 3.92
Years of birth: 1990-2005	
Mean maternal age $\pm$ SD	27.2 $\pm$ 5.24 (P* 0.016)
Maternal age at birth of DS child (years)	
Mean $\pm$ SD	36.27 $\pm$ 7.59 (P* 0.0002)
Paternal age at birth of DS child (years)	
Mean $\pm$ SD	41.45 $\pm$ 8.09
Consanguinity (%)	
Consanguineous	17 (77.3)
Not consanguineous	21 (95.4)
Similar case in the family (%)	
No	01 (04.6)
Yes	

*Student's t-test, SD = Standard deviation; DS = Down syndrome.

Chromosomal analysis was performed in 22 cases, of which 20 (91%) had free trisomy 21, 1 had trisomy 21 with translocation (46,XY, of (21;21)(q10;q10),+21) and 1 had mosaic trisomy 21 (47,XY,+21/46,XY) (Table 1).

In Table 2, the mean age of the mother at first birth was significantly higher in (1990-2005) than in (1974-1989) ($P = 0.016$).

Approximately 81% of the cases were in the last or second last birth order. Parental consanguinity was reported in 22.7% of cases. Only 1 patient had a similar case in his family (Table 2).

The mean maternal age at birth of DS children was 36.27 ± 7.59 years, of which 54.5% were in the advanced age group (≥ 35 years). This mean was significantly higher than the maternal age of mothers of non-trisomic children, which was 27.83 ± 6.34 years ($P = 0.0002$).

Discussion

81% of the children with Down syndrome were in the last or second last birth order. This finding is consistent with previous studies in the UAE and Dhaka⁴. Several studies suggest an increased risk of DS with increasing parity,⁵ which is consistent with our finding.

The age at marriage in these last years was higher than in the earliest years, so the age at first birth was higher.

Advanced maternal age remains the most important risk factor for trisomy 21. It has been reported in many previous studies in different countries (India, Turkey, Malaysia, England and Wales, Jordan, Saudi Arabia and Tunisia).⁶

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PHYTOCHEMICAL SCREENING AND ANTIOXIDANT ACTIVITIES OF *EPHEDRA ALATA* STEMS AND LEAVES EXTRACTS

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INTRODUCTION

Traditional plant remedies have always guided scientists in the search for new medicines to maintain and promote healthy lives for humans and animals. According to the WHO, more than 80% of African populations rely on traditional medicine and pharmacopoeia to deal with health problems. Algeria has a rich and varied flora estimated at around 3,000 plant species, 15% of which are endemic and belong to different botanical families (Ouguir et al., 2021). Several of these Algerian plants, with varied pharmacological effects, have been little studied, such as *Ephedra alata*, belonging to the Ephedraceae family and commonly known by Alenda. It is a light green, densely branched plant that grows to around 50-100 cm tall, with a strong pinescent and astringent taste. This study focuses on the phytochemical characterisation and optimisation of extraction methods of phenolic compounds from the *Ephedra alata* species. **Keywords:** Apiaceae - *Ephedra alata* - Phenolic Compounds - Extraction techniques.

MATERIAL AND METHODS

Solvents of different polarities were used to optimise extraction techniques to obtain higher fractionation yields from *Ephedra alata*, including methanol, methanolic water, ethyl acetate, acetone and dichloromethane. The sample was prepared by three methods: maceration, sonification and ultrasound. Total phenols were determined by the method using the Folin-Ciocalteu reagent and gallic acid as an internal standard; flavonoids were determined by the technique based on the formation of coloured complexes between flavonoids and $AlCl_3$ and condensed tannins were determined by the method using vanillin in the presence of HCl, using catechin as a positive control. Quantification of total antioxidant capacity (TAC) was measured by the phosphomolybdenum method.

RESULTS

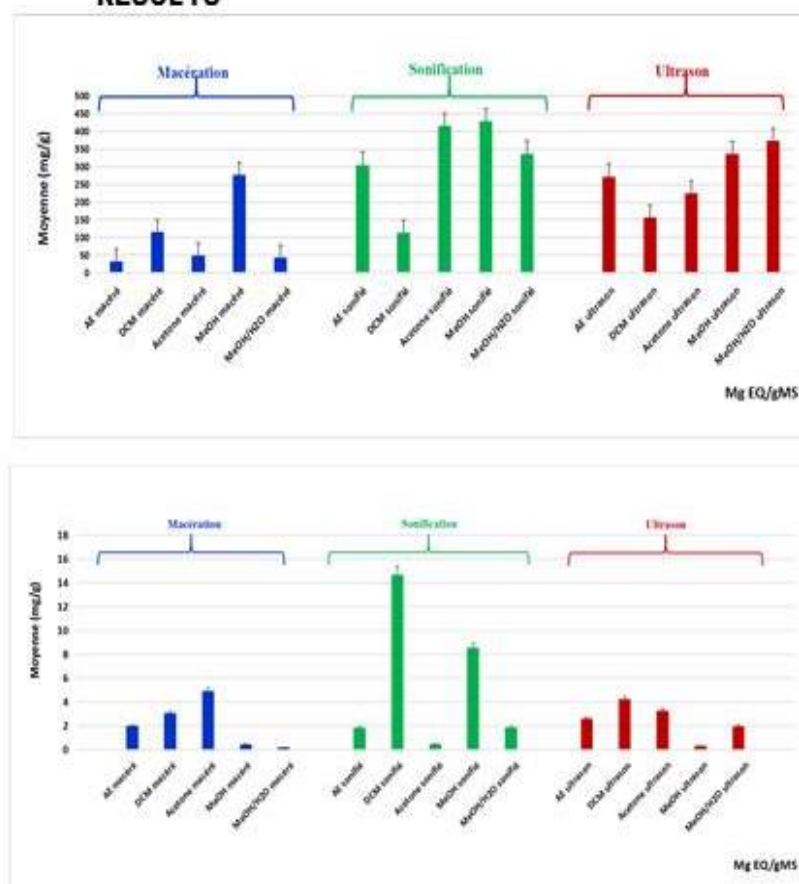


Figure 1 : Phenolic compounds and flavonoids

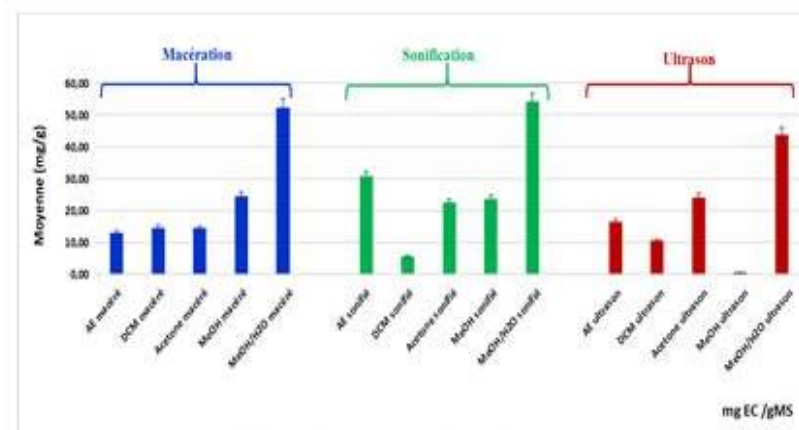


Figure 2. Condensed Tannins

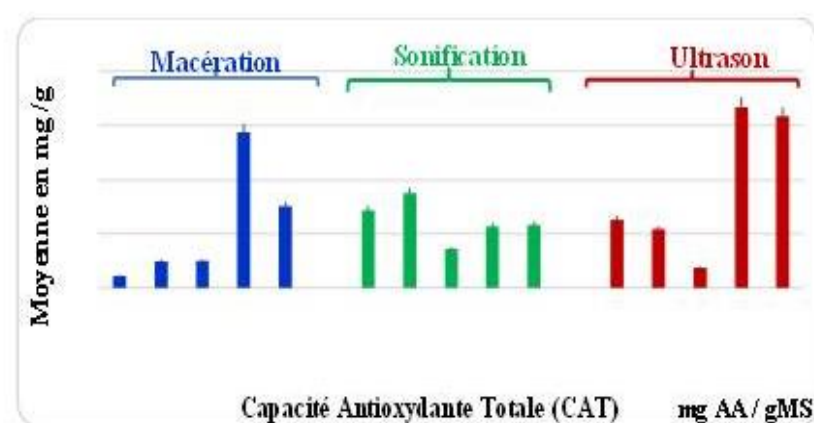


Figure 3. Total antioxidant capacity

DISCUSSION

The best yield results showed a polyphenol content of 428.55 ± 138.66 (mg GAE/g DM) for the MeOH fraction treated by maceration and sonification; flavonoids of 14.66 ± 0.23 (mg EQ/g DM) for the dichloromethane fraction treated by sonification and ultrasounds, and condensed tannins of 54.13 ± 11.03 (mg EC/g DM) for the MeOH/H₂O fraction according to the three extract treatments. With regard to total antioxidant capacity, the CAT was estimated at 334.10 ± 20.80 (mg GAE/100 g MS) for the MeOH fraction with maceration and ultrasounds.

CONCLUSION

The results of our extractions highlighted the presence of significant levels of polyphenols, flavonoids and condensed tannins with an interesting total antioxidant capacity in this species. These characteristics need to be explored in depth, both in an industrial context and in terms of their therapeutic use in the treatment of a wide range of human diseases.

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Association of ABCB1 gene c.3435C>T polymorphism with the adverse drug reactions of carbamazepine treatment in epileptic patients.

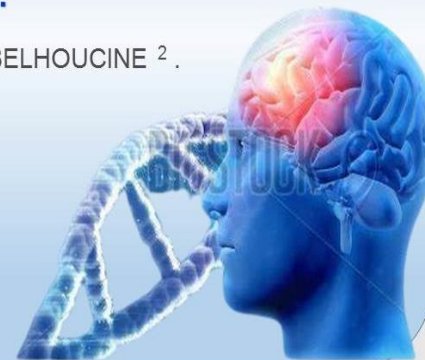
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Abstract: Epilepsy affects 70 million people worldwide, with approximately 1% of the Algerian population impacted. Carbamazepine is widely used due to its affordability, but around one-third of patients experience resistance and severe side effects. Genetic variations, particularly in the ABCB1 gene, are linked to reduced drug bioavailability and treatment resistance. This study examines the impact of the ABCB1 c.3435 C>T polymorphism on carbamazepine response in 24 epileptic patients from western Algeria. Results indicate a significant association between the "T" allele and the side effect "dry mouth" ($p = 0.0008^*$), though further validation with a larger sample is needed. The study aims to support the development of a pharmacogenetic tool for optimizing epilepsy treatment.

Keywords: Carbamazepine, Epilepsy, ABCB1 c.3435C>T, Personalized medicine, Adverse drug reactions.

Introduction

Epilepsy is a neurological disorder characterized by a persistent tendency to generate epileptic seizures, (1) with an estimated global prevalence of between 0.5 and 1 %. (2) In Algeria, approximately 1% of the population suffers from epilepsy. (3) Carbamazepine (CBZ) is a first-generation antiepileptic drug that is frequently prescribed as an antiepileptic drug. However, the use of CBZ is complicated by significant genetic variations in individual patient response and the occurrence of unexpected adverse events, reported in approximately 30–50% of patients. Polymorphisms in the ABCB1 gene have been associated with response to CBZ treatment in patients with epilepsy. (4)

Goals

The aim of this study is to evaluate the impact of ABCB1 c.3435C>T polymorphism on the Adverse drug reactions of CBZ in patients with epilepsy. This pharmacogenetic study aims to provide a molecular biology tool that could improve the lives of patients, by allowing the choice of therapy.

Materials and Methods

In this study, we recruited 25 epileptic patients from the University Hospital of Oran at the Neurology department, and who were of different age groups under Carbamazepine as treatment. A blood sample was taken for each patient in an EDTA tube.

The subjects were divided into two groups (CBZ-resistant and CBZ-non-resistant). For molecular study, DNA extraction was performed by NaCl Salting Out extraction technique. (5) Then, the identification of the ABCB1 c.3435C>T polymorphism was carried out by the Polymerase Chain Reaction Fragment Length technique. Polymorphism (PCR-RFLP), finally a statistical analysis was done to study the association between this polymorphism and the occurrence of adverse reaction related to CBZ treatment.

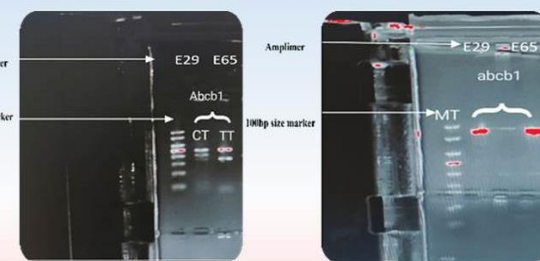


Fig.2 Photos of electrophoretic gels showing the results of the identification of the ABCB1c.3435C>T polymorphism with the PCR-RFLP method

Results and Discussion

The studied population was mostly from the west Algeria. ABCB1 3435TT polymorphism and 3435 T allele appear to have a significant association with oral drought adverse effect related to CBZ treatment in west Algerian epileptic patients. Most of studies were carried out aiming to determine the correlation between ABCB1 c.3435C>T polymorphism and the resistance to CBZ, therefore our results are original and can help enhance personalizing the treatment and improve patients quality of life.

Tableau.1 The allelic and genotypic distribution of the ABCB1 c.3435C>T polymorphism between the group with oral drought adverse affect and the group with no oral drought in Algerian epileptic patients treated with CBZ.

	ODr+	ODr-	OR	IC (95%)	P value
	n=6 (%)	n=19 (%)			
Homozygous CC (Wild Type)	1 (16,6)	12 (63,1)	/	/	/
Homozygous TT (mutated)	4 (66,6)	3 (15,78)	16	[0,27-200,9]	0,0149*
Heterozygous CT	1 (16,6)	4 (21,05)	3	[0,15-59,89]	0,45
CC vs (CT & TT)	5 (83,3)	7 (36,84)	8,57	[0,82-89,03]	0,0469*
Allele C (Wild Type)	3	28	/	/	/
Allele T (muté)	9	10	0,1	[0,02-0,44]	0,0008*

n : Number, % : Percentage, OR : Odds Ratio, CI : Confidence interval, p : Statistical significance, ODr+ : presence of oral drought, ODr- : absence of oral drought.

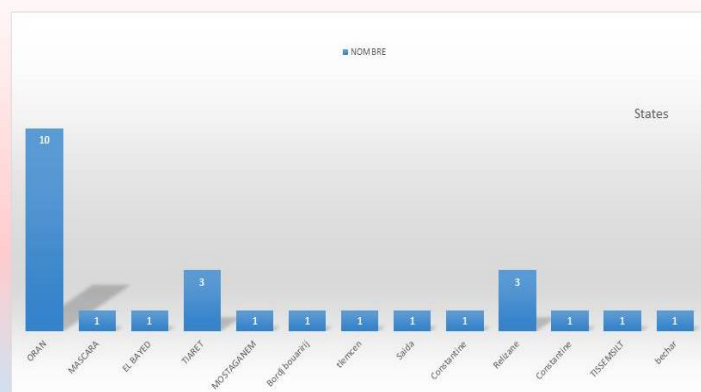


Figure.3 Distribution of the population of epileptic patients according to geographical origin.

Conclusion

The sample size of the current study may not be large enough to confirm a significant association in the occurrence of carbamazepine. We hope to create a genetic database with all the most common polymorphisms that have serious effects on the response to antiepileptic drugs.

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Comparison study between RT-PCR and LAMP methods for a rapid COVID-19 diagnosis in an Algerian sample

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Abstract

It is evident that the RT-qPCR remains a gold standard in the detection of the coronavirus, but an immediate need for alternative less expensive, more rapid tests was clear. The study aimed to compare the CTs observed between RT-qPCR and RT-LAMP methods.

We carried out a retrospective study at the molecular biology laboratory of Mostaganem from January 01, 2021, to December 01, 2022.). The samples were treated with three different RT-qPCR kits. The nasopharyngeal swab samples were tested by RT-LAMP and were already genotyped by RT-qPCR before.

Our results showed that there is a strong difference in the average CTs between the different used kits. Indeed, the average CT between the two kits QuantiNova and Sansure is much higher than that obtained by LAMP (respectively 26.50 vs. 18.86 and 37.01 vs. 31.18). However, the average CT obtained by the Gene Proof kit is rather lower than that of Smart Amp (20.64 vs. 27.22, respectively). This suggests that the LAMP method has the same reliability as RT-qPCR. We concluded that the LAMP with its many advantages can replace RT-qPCR in the search for SARSCov-2.

Keywords:

COVID-19, SARS-Cov-2, RT-qPCR, LAMP, threshold CT

Introduction

The SARS-CoV-2 virus testing is essential for the COVID-19 diagnosis and treatment. It is important to underline that this screening was also considered a prerequisite for different economic and social activities such as international flights, offline work, access to shopping malls as well as sporting and social events. For this, an unimaginable number of rapid molecular tests for COVID-19 have been carried out in numerous medical institutions. It is evident that the RT-qPCR remains a gold standard in the detection of the coronavirus, but an immediate need for alternative less expensive, more rapid tests was clear. The study aimed to compare the different RT-qPCR kits used at the COVID-19 laboratory of the University of Mostaganem, and, to compare the CTs observed between RT-qPCR and RT-LAMP methods.

Material and Methods

This is a retrospective study carried out at the level of the molecular biology laboratory of Mostaganem from January 01, 2021, to December 01, 2022. Viral RNA extraction was performed from the swab samples immediately in the COVID-19 laboratory of Mostaganem using the RNeasy Micro Kit (QIAGEN, GERMANY). The samples were treated with three different RT-qPCR kits and one RT-LAMP kit (Smart Amp) (**Table 1**).

The nasopharyngeal swab samples obtained from 33 COVID-19 patients were tested by RT-LAMP and were already genotyped by RT-qPCR before. Sensitivities and specificities of RT-LAMP compared with RT-qPCR were analyzed as a function of the CT values.

Table 1: The targeted genes by the different channels for each kit used in the Mostaganem Covid-19 laboratory.

RT-PCR Kits	Reading Channels			
	FAM	ROX/TEXAS	CYS	JOE/VIC
SANSURE	ORF	N	IC	/
GenePROOF	RdRp/E/N	/	/	IC
QuantiNova	RdRp	Nsp9	/	IC
Smart Amp	Smart cible	/	/	/

FAM, ROX, CYS, JOE/VIC: reading qPCR channels. Open Reading Frame: ORF gene, Envelope: E gene, Nucleocapsid: N gene, the Non-structural protein 9: Nsp9 gene, and RNA-dependent RNA polymerase: RdRp gene. CI: Internal Control, min: minute, CT values: Cycle Threshold.

Results

Our results showed that Furthermore, we have noted that there is a strong difference in the average CTs between the kits. Indeed, the average CT between the two kits QuantiNova and Sansure is much higher than that obtained by LAMP (respectively 26.50 vs. 18.86 and 37.01 vs.

31.18). However, the average CT obtained by the Gene Proof kit is rather lower than that of Smart Amp (20.64 vs. 27.22, respectively) (**Table 2**). This suggests that the LAMP method may have the same reliability as RT-qPCR and, it can replace RT-PCR in case of emergencies or epidemics.

Table 2: Comparison between the 33 samples treated by the three RT-qPCR kits with the LAMP kit.

RT-PCR kits/Smart Amp kit	Mean CT	Standard Deviation	P value
QuantiNova vs. Smart Amp (n=18)	26.50	4.87	NS
	18.86	9.52	
Sansure vs. Smart Amp (n=04)	37.01	3.95	
	31.18	0.93	
Gene Proof vs. Smart Amp (n=12)	20.64	6.12	
	27.22	4.39	

N: number of samples. CT: cycle threshold. SD: Standard Deviation. P value < 0.05 is statically significant.

Discussion

Since the start of the pandemic, the real-time RT-qPCR test has been the gold standard for diagnosing SARS-CoV-2. Unfortunately, cases of false negatives have also been reported due to sample collection, sample transport, and viral RNA extraction. Furthermore, LAMP is an ultrasensitive nucleic acid amplification method that can detect minute quantities of DNA or RNA templates within roughly an hour.

The study by Inaba M et al. analyzed the sensitivity and specificity of the LAMP method compared to RT-qPCR. Inaba's team showed that the sensitivity and specificity of RT-LAMP were 100%. This suggests that the LAMP method has the same reliability as RT-qPCR [1].

Although the Ct value does not indicate the severity of the disease, it could play an important role in clinical and public health decision-making if carefully analyzed along with other factors. This analysis is done by laboratories that understand all the factors under study [2].

Conclusion

Finally, we can conclude that the RT-LAMP method can replace RT-qPCR in the context of SARS-COV-2 virus research, especially when the marketed kits are not adapted to a given ethnic population.

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Immune Marker Methylation and Its Impact on Breast Cancer Progression

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Abstract

The role of immune regulation in breast cancer is increasingly recognized. This study investigates the influence of DNA methylation in immune-related genes (PDCD1, CD274, TLR4, TLR9, CTLA4, NFKB1) on breast cancer progression, using data from The Cancer Genome Atlas (TCGA). Our objective is to identify key methylation patterns linked to clinical outcomes and molecular subtypes of breast cancer, potentially informing novel therapeutic strategies.

Keywords

Breast cancer, immune markers, DNA methylation, prognosis, TCGA database.

Introduction

Breast cancer is a heterogeneous disease encompassing diverse molecular subtypes, including Luminal A, Luminal B, Basal-like, HER2-enriched, and Normal-like, each associated with distinct clinical outcomes. Recent research highlights the critical role of the immune system in tumor progression, particularly the impact of immune-related genes. Epigenetic modifications, such as DNA methylation, can silence or reduce the expression of immune-regulatory genes, contributing to tumor immune evasion. This study explores the methylation profiles of immune genes (CTLA4, PDCD1, CD274, TLR4, TLR9, and NFKB1) and their associations with clinical factors (e.g., age, pathologic stage, and menopausal status) and patient prognosis. By investigating the epigenetic regulation of these immune markers, we aim to identify potential therapeutic targets, such as demethylating agents or immunotherapy, to improve outcomes for patients with aggressive breast cancer subtypes.

Material and Methods

Using data from 531 breast cancer patients in the TCGA, we performed a differential methylation analysis of immune-related genes. Methylation levels were correlated with clinical variables, including disease progression and overall survival. Cox proportional hazards models were applied to evaluate the prognostic significance of immune marker methylation.

Results

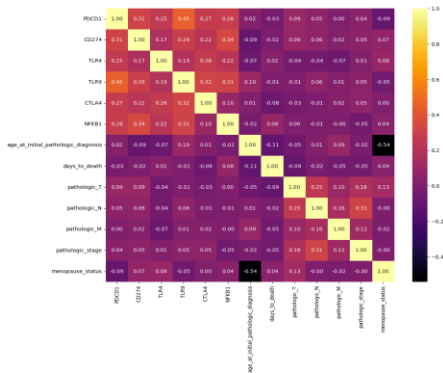


Figure 1 : Pearson Correlation Matrix between Biomarkers and Clinical Parameters

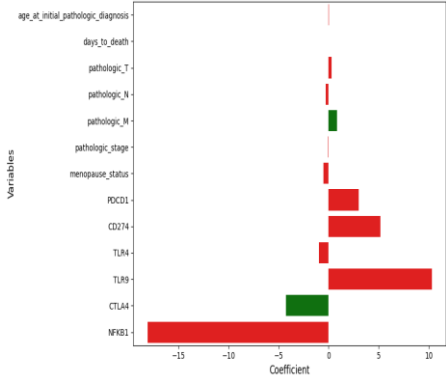


Figure2: Visualization of Hazard Ratios from Cox Proportional Hazards Analysis

Patients were stratified into molecular subtypes: Luminal A, Luminal B, Basal-like, HER2-enriched, and Normal. Methylation analysis revealed significant associations between the methylation status of immune markers and clinical outcomes. Key findings include:

Days to Death: High methylation levels of CTLA4 and PDCD1 were associated with reduced survival ($p < 0.005$).

Pathologic Stage M: Methylation patterns correlated with metastatic progression ($p = 0.02$), indicating a higher mortality risk in metastatic cases. CTLA4 and NFKB1 demonstrated marginal associations with prognosis, warranting further investigation. While other biomarkers (PDCD1, CD274, TLR4, TLR9) did not show a direct impact on OS, their significant correlations with key clinical factors (age at diagnosis, pathologic stage, and menopausal status) suggest context-dependent prognostic roles.

Discussion

The results indicate that methylation of immune genes CTLA4 and PDCD1 may contribute to immune evasion mechanisms in breast cancer, positioning them as potential therapeutic targets. Although PDCD1, CD274, TLR4, and TLR9 do not show a direct significant impact on survival in this multivariate model, their associations with key clinical parameters (age at diagnosis, pathologic stage, and menopausal status) suggest that their prognostic role may depend on specific molecular contexts and the tumor environment.

Conclusion

These results underscore the potential of targeting immune-related genes, particularly CTLA4 and PDCD1, using demethylating agents or immunotherapy, which could improve treatment response for patients with aggressive breast cancer subtypes. Further research is needed to validate these findings and explore their clinical utility in personalized treatment strategies.

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ICEEP: International Conference on Education Ethics and Publishing 2024

Knowledge and Attitudes of Medical Students towards Plagiarism: A Cross-Sectional Study in Northwest Algeria

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Abstract

Background: Plagiarism is a serious offense in academia, particularly in medical education, where honesty in research, accurate reporting of findings, and proper citation practices are essential for maintaining public trust and ensuring the validity of medical knowledge. This study aimed to assess the knowledge and attitudes of medical students toward plagiarism in Northwest Algeria.

Methods: A cross-sectional study was conducted in Medical Sciences faculty, Abou Bekr Belkaid University, Algeria, from March 2024 to June 2024 using a convenience sampling method and a questionnaire that collected information on the participant's social-demographic characteristics, knowledge about plagiarism, and measuring their three attitudinal factors (positive and negative attitude and subjective norms) toward plagiarism.

Results: A total of 270 undergraduate and postgraduate medical students participated in the study. The data show a predominantly female sample. A total of 67.4% of participants had a moderate understanding of plagiarism (knowledge score between 5 and 8 of 10). In addition, the results revealed a moderate positive attitude (38.79 ± 6.144), negative attitude (23.97 ± 3.093), and subjective norms (29.91 ± 5.609) toward plagiarism. The moderate scores obtained in all three categories revealed confusion, lack of a clear attitude, and, most worryingly, a lack of knowledge and awareness of the importance of academic integrity.

Conclusion: This study provides valuable insights into the attitudes of medical students toward plagiarism in Northwest Algeria. The findings highlight the need for educational interventions that enhance students' understanding of plagiarism and promote ethical academic practices.

Keywords:

Plagiarism, Medical students, Knowledge, Attitudes, Northwest Algeria

Introduction

In academic settings, particularly in medical education, the emphasis on originality and proper attribution makes plagiarism a serious offense. For students, engaging in plagiarism jeopardizes their educational and professional growth, eroding their self-efficacy. Moreover, as future healthcare providers, medical students bear the responsibility for patients' health, necessitating adherence to stringent ethical standards.

Despite the global emphasis on academic integrity, research on plagiarism in Algeria, particularly among medical students, is notably limited. Therefore, this study aims to assess the knowledge and attitudes of Algerian medical students towards plagiarism.

Material and Methods

Study design and setting

This cross-sectional study was conducted from March to June 2024 at Benzerdjeb Benaouda Faculty of Medicine - Abou Bekr Belkaid University in Tlemcen, Algeria.

Study population and sampling technique

The study targeted undergraduate and postgraduate medical students by employing a convenience sampling method with voluntary participation criteria.

Data collection tools and procedures

The study employed a structured questionnaire to gather data on:

- **Participants' demographics**
- **Knowledge levels:** assessed through 10 binary questions based on a quiz from Sherbrooke University.
- **Attitudes Toward Plagiarism questionnaire (ATP):** The ATP questionnaire evaluates students' attitudes toward plagiarism and

comprises 29 validated statements utilizing a 5-point Likert scale validated by Mavrinc et al. 2010.

Students were contacted via institutional emails to complete an anonymous online questionnaire. A declaration of consent on the first page functioned as an alternative to written consent.

Data analysis:

Data entry utilized Microsoft Excel (Microsoft Corporation, 2016). Statistical analysis was conducted with SPSS for Windows, Version 20.0 (IBM Corp., 2011).

Results

A total of 282 students responded to our questionnaire. The data in **Table 1** highlights the cohort's characteristics.

Table 1. Characteristics of study respondents (n=282).

Variable		N
	(%)	
Age	21.83±4.28 [17- 40]	
Sex	Male	57 (20.20)
	Female	225 (79.80)
Status	Undergraduate student	222 (78.70)
	Postgraduate student	60 (21.30)
Discipline	Medicine	100 (35.50)
	Dentistry	40 (14.20)
	Pharmacy	142 (50.40)
	1 st	117 (41.50)
Study year	2 nd	46 (16.30)
	3 rd	43 (15.20)
	4 th	30 (10.60)
	5 th	28 (9.90)
	6 th	15 (5.30)
	7 th	3 (1.10)
Implication in previous published research projects	Yes	95 (33.70)
	No	187 (66.30)
Implication in ongoing research projects	Yes	70 (24.80)
	No	212 (75.20)

67.4% of participants had a moderate understanding of plagiarism (knowledge score between 5 and 8 of 10). In addition, the results revealed a moderate positive attitude (38.79 ± 6.144), negative attitude (23.97 ± 3.093), and subjective norms (29.91 ± 5.609) toward plagiarism (**Table 2**).

Table 2. Knowledge and ATP scores

Component	Score	Level n (%)		
	Mean ± Sd	Low	Moderate	High
Knowledge	6.45 ± 1.454	26 (9.20)	190 (67.40)	66 (23.40)
Positive attitude	38.79 ± 6.144	17 (6.00)	227 (80.50)	38 (13.50)
Negative attitude	23.97 ± 3.093	2 (0.70)	221 (78.40)	59 (20.90)
Subjective norms	29.91 ± 5.609	33 (11.70)	227 (80.50)	22 (7.80)

Correlation knowledge score and the three ATP dimensions:

There was a statically significant weak positive correlation between the knowledge score, positive attitude and subjective norms scores ($r(280) = 0.252$, $p=0.000$ and $r(280)=0.220$, $p=0.000$ respectively). And non significant negative

correlation between knowledge and negative attitude scores.

Knowledge, positive attitude, negative attitude and subjective norms score predictors:

The model suggests that Status and Study Year are the strongest positive predictors of Knowledge Score, while Discipline has the strongest negative association. However, the negative R-squared score indicates that the model performs poorly in explaining the variance in Knowledge Score.

Discussion

The findings provide significant insights into medical students' knowledge and attitudes towards plagiarism in Northwest Algeria. This study identifies several critical themes for further exploration.

Knowledge of Plagiarism

The study indicates a troubling knowledge gap regarding plagiarism among medical students. Although most participants recognized the definition of plagiarism, qualitative insights reveal a misunderstanding of its practical implications. Many students equated plagiarism solely with verbatim copying, neglecting other forms like improper paraphrasing or self-plagiarism. This misunderstanding may stem from insufficient instruction on academic integrity in the medical curriculum, echoing trends seen in other regions and fields. It emphasizes the urgent necessity for educational institutions to enrich their curricula with thorough lessons on intellectual property, citation norms, and the ethical aspects of research and writing.

Attitudes Towards Plagiarism

Our study uncovered a dichotomy in students' attitudes towards plagiarism, revealing both awareness and desensitization. While many participants professed a commitment to honesty, a notable number justified plagiarism due to external pressures, such as deadlines or performance demands. This aligns with previous research indicating that academic competition and workload pressures often lead students to rationalize unethical actions.

The gap between students' ethical beliefs and actual behaviors raises concerns about the efficacy of ethical training and suggests an academic environment that may tacitly condone misconduct.

It necessitates a reassessment of evaluation practices in medical education, fostering a culture that values comprehension and knowledge application over mere performance.

Conclusion

In conclusion, this study highlights significant concerns regarding plagiarism among medical students in Northwest Algeria, revealing critical gaps in knowledge and attitudes. The dynamics of peer influence, institutional culture, and external pressures necessitate a comprehensive strategy to enhance academic integrity. It is essential for future medical professionals to comprehend the ethical ramifications of plagiarism as integral to their professional identity. Institutions should actively promote these principles via thorough education, supportive policies, and a culture fostering dialogue and accountability.

Recommendations for Future Research

Longitudinal research could explore the evolution of students' attitudes during their training and the impact of interventions on educational integrity. Moreover, comparative studies across various regions or fields may yield essential insights into the generality or particularity of issues related to plagiarism and academic integrity.

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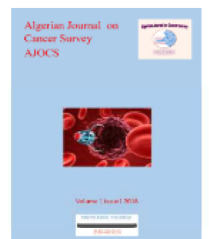
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