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Editor: Abdeldjalil KHELASSI

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Presentation
The International Congress on Health Sciences and Medical Technologies 2025, ICHSMT'25, is the 9th edition, following several online editions held in 2021, 2023, and 2024, add in-person established in 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.**

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Ethnobotanical study of medicinal plants used in the treatment of respiratory system infections in the region of Relizane, Algeria

Hayat Hadj Ali[1], Zahéra Souidi[2], Bachir Benarba[3]
[1.] Institute of Agricultural Sciences, University of Djillali liabès, Sidi Bel-Abbès, Algeria
[2.] LRSBG Laboratory, University of Mustapha Stambouli, Mascara, Algeria
[3.] Thematic agency for research in health and life sciences, Oran, Algeria

Abstract

Background: Respiratory diseases, ranging from allergies to cancer, account for approximately 5.5 million medical consultations annually. With 80% of the world's population relying on traditional medicine, the use of medicinal plants is growing in importance. This study aims to establish a database of medicinal species used in the treatment of respiratory infections.

Methods: Using 100 questionnaire sheets, a series of ethnobotanical surveys were carried out in the field during the year 2022/2023 with users, herbalists and traditional practitioners.

Results: The analysis of the collected data made it possible to inventory 35 species belonging to 19 families, the most important of which in terms of their specific population are: Lamiaceae, Apiaceae, Asteraceae and Fabaceae. The results of this study also showed that the foliage is the most used part, and the majority of remedies are prepared in the form of decoction and infusion and administered exclusively orally. In addition, asthma, respiratory allergies, coughs, undefined lung infections, spasms and colds are the most treated symptoms.

Conclusion: These results can be considered as a source of information for scientific research in the field of phytochemistry and pharmacology.

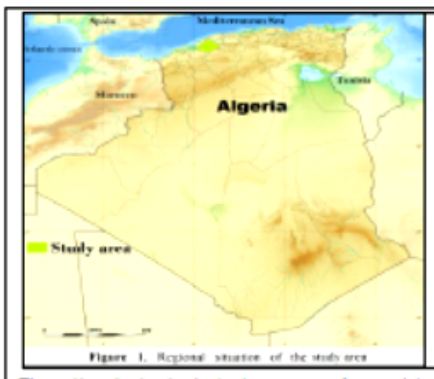
Keywords:

Respiratory infections, Ethnobotany, Medicinal plants, Traditional medicine, Relizane

Introduction

Respiratory tract infections represent a public health issue that is often underestimated. Traditional knowledge related to medicinal plants remains very strong and constitutes a rich empirical heritage for treating these conditions. A recent ethnobotanical study of medicinal plants used particularly for respiratory disorders was conducted in the Relizane region. These plants offer valuable opportunities for restoring local medicinal ecosystems and for enhancing phytotherapeutic resources within a medico-ecological context. The objective of this research is to analyze the diversity, modes of use, and therapeutic potential of local plants employed in the treatment of respiratory infections, in order to contribute to their conservation and sustainable integration.

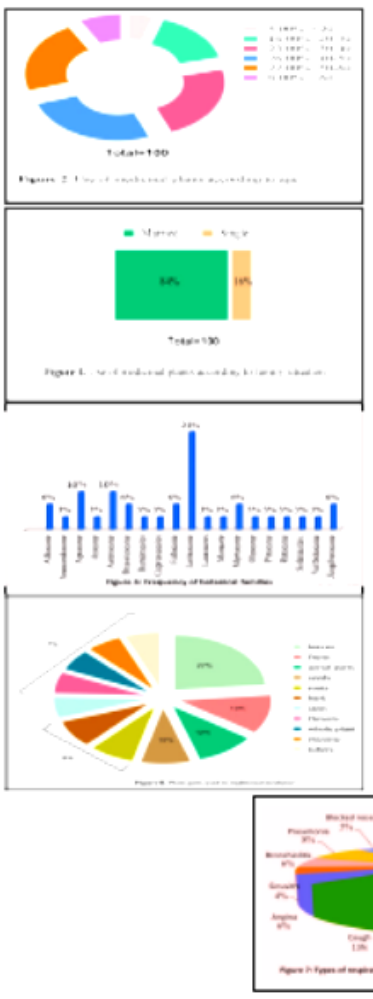
Material and Methods



The ethnobotanical study was carried out in the county of Relizane (North-West Algeria) including five regions: Zemmora, Mazouna, Souk El had, Oued Rhiou, and Yellel located in the Tellian Atlas Chain (North-West Algeria) (Figure 1). Relizane is characterized by arid and hot summers and cool and windy winters with temperature varying from 44°F to 100°F, and an annual rainfall of almost 279 mm. The province covers an area of 484000 ha with 784 700 inhabitants.

The ethnobotanical study was performed in the five regions of the county of Relizane from 2022to 2023 among local populations in contact with medicinal plants (villagers and herbalists). In total 100 participants were included in the present study. Data about the medicinal species used, their parts, the preparation method and routes of administration, has been gathered. The voucher specimens were prepared and submitted to the LRSBG herbarium (Department of Biology, Faculty of Nature and Life Sciences, Mascara University, Algeria). Local names were given in Arabic and/or in Amazigh languages. The taxonomic identification of the medicinal species mentioned by the informants was carried out using the standard literature (Benarba et al., 2015; Kaddem, 1990; Halimi et al., 1997; Quézel and Santana, 1962).

Results



Discussion

Herbalists and traditional practitioners widely favor species of the genera Mentha, Thymus, and Eucalyptus in the treatment of respiratory infections due to their exceptional richness in bioactive compounds. Mint contains primarily menthol, known for its decongestant, antitussive, and mildly anesthetic properties, which help facilitate breathing. Thyme, on the other hand, is particularly rich in thymol and carvacrol, two molecules with strong antiseptic, antibacterial, and antiviral effects, making it an effective traditional remedy for respiratory ailments. The therapeutic value of eucalyptus is mainly attributed to 1,8-cineole (eucalyptol), a compound with expectorant, mucolytic, and anti-inflammatory properties that helps to thin and eliminate bronchial secretions. In addition to their demonstrated pharmacological effects, these plants are widely available in Mediterranean and North African regions and benefit from a long-standing ancestral use rooted in ethnobotanical practices, which explains their privileged status in traditional phytotherapy for respiratory infections.

Conclusion

This inventory provides a source of information that contributes to knowledge of medicinal flora and the preservation of local traditional knowledge. It can also serve as a database for the development of medicinal plants with a view to discovering new active ingredients usable in pharmacology.

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Effects of Aerobic Training on Nutritional, Metabolic Status and Oxidative Stress in Women with Type 2 Diabetes

MERZOUK Amel Zoubeyda, MERZOUK Hafida
Laboratory of physiology physiopathology and biochemisty of nutrition, SNVTU Faculty, University of Tlemcen, Algeria

Abstract

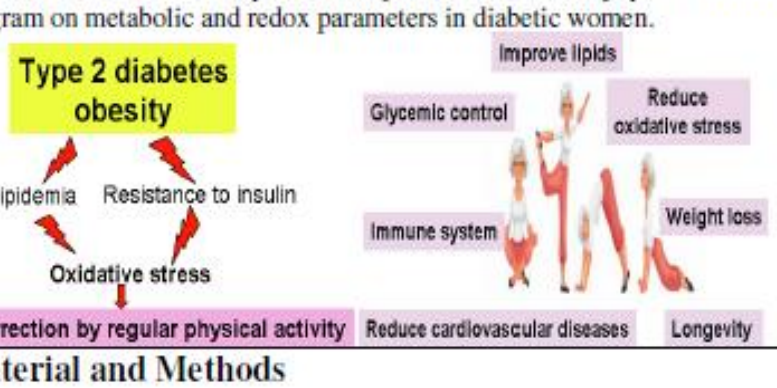
Background: Physical activity has beneficial effects on physical and psychological development, reduces mortality, improves quality of life, and prevents major chronic diseases. In diabetes mellitus, certain complications and oxidative stress can be mitigated by regular physical exercise.
Methods: Eighty women with type 2 diabetes (40 overweight and 40 of normal weight) and 60 healthy controls participated in a one-year aerobic training program. Blood samples were collected to determine serum glucose, lipid profile, and redox biomarkers. Daily nutrient intake was also assessed.
Results: Overweight diabetic women showed higher energy, fat, and carbohydrate intakes, accompanied by micronutrient deficiencies, lipid abnormalities, and oxidative stress. Aerobic exercise significantly reduced serum triglycerides (TG) and LDL-C while increasing HDL-C in trained diabetic women. Furthermore, aerobic training enhanced antioxidant defenses (GSH, catalase, SOD) and reduced oxidative markers (superoxide anion, MDA, protein carbonyls) across all groups.
Conclusion: Aerobic exercise exerts a positive influence on health status in diabetes. Implementing structured exercise programs for women with type 2 diabetes is crucial to improve metabolic profile and redox balance.

Keywords:

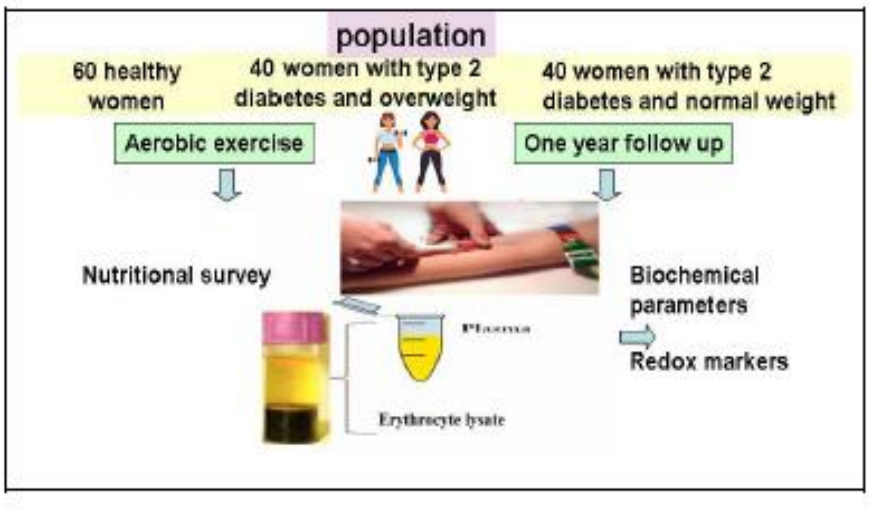
Diabetes, Overweight, Oxidative stress, Aerobic exercise, Metabolism

Introduction

Type 2 diabetes is characterized by alterations in glucose and lipid metabolisms. Free radicals and oxidative stress have been implicated in the pathogenesis of various diabetic-related symptoms and complications. Regular physical aerobic exercise has been associated with cardiovascular performance, lipid and lipoprotein profiles and glycemic control improvement and mortality reduction. Indeed, physical exercise reduces adipose tissue, improves enhances immune system and decreases oxidative stress. The aim of this study was to explore the effects of physical aerobic program on metabolic and redox parameters in diabetic women.



Material and Methods



Results

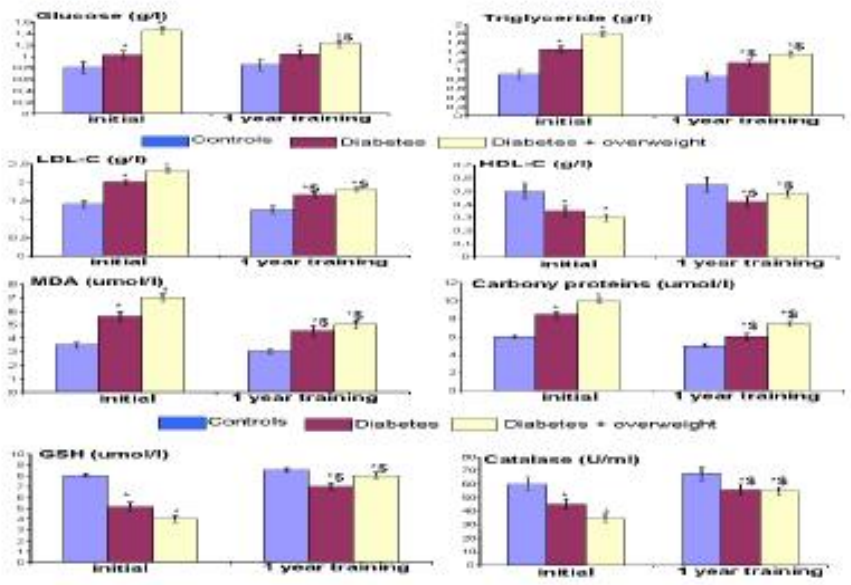


Figure1. Biochemical and redox markers

Table1: Nutritional survey

	women with type 2 diabetes and normal weight	women with type 2 diabetes and overweight	Reference
Caloric intake (Kcal/d)	1845,50 ± 124	2600 ± 105	2000 ± 200
Proteins (%)	12 ± 2	10 ± 2	15
Total carbohydrate (%)	50 ± 4	60 ± 3	55
Simple carbohydrate (%)	18 ± 2	20 ± 2	15
Complexe carbohydrate (%)	32 ± 4	40 ± 4	40
Fibers (g/J)	25 ± 3	22 ± 2	30
Lipids (%)	38 ± 5	30 ± 3	30
Cholesterol (mg/J)	200 ± 24	230 ± 20	250

Discussion

Aerobic exercise is commonly prescribed as a non pharmacological strategy for prevention of several health problems. In this study, we showed that one year physical aerobic exercise program not only improves physical fitness and lipid profile but also reduces oxidative stress in type 2 diabetic women. Metabolic and redox changes after the study period, one year, were then not influenced by nutritional habits in these women. Therefore, any metabolic or redox modification observed in training diabetic women may be attributed to aerobic exercise. Diabetic women showed a significant reduction in glucose, triglyceride, LDL and a significant enhancement of HDL-C after one year aerobic training, especially in the association diabetes-overweight. In addition, training diabetic women reported a significant rise in antioxidant defense status (glutathione, catalase) with a concomitant fall in oxidant status (MDA, carbonyl proteins), related to a strong effect of training on oxidant/antioxidant balance.

Conclusion

Aerobic training plays an important role in improving diabetes complications, such as reducing plasma glucose, TG, LDL-C levels and oxidant markers and enhancing HDL-C and antioxidant defense markers.

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Origanum marjoram: a valuable remedy for polycystic ovary syndrome A phytochemical study and antioxidant activity

Elattafia BENHAMIMED

[1] *Department of Biology, Faculty of Natural and Life Sciences, University of Mostaganem, Algeria*
[1] *Laboratory of Pharmacognosy and Api-Phytothérapy (LPAP), University of Mostaganem- Algeria.*
*Corresponding Author E-mail: elattafia.benhamimed@univ-mosta.dz

Abstract
Origanum majorana is an annual plant belonging to the *Lamiaceae* family. It is widely used in traditional medicine and is renowned for its balancing effect on female hormones, particularly in cases of PCOS. The aim of this study is to contribute to the phytochemical study of the bioactive compounds that are present, as well as the dosage of these compounds, followed by research into the anti-radical activity (DPPH free radical scavenging) of aqueous extracts of marjoram prepared by maceration and decoction. Phytochemical screening of the plant revealed the presence of terpenoids, catching tannins, flavonoids and free quinones, and the absence of alkaloids. Quantitative analysis of the total polyphenols and total flavonoids in the extracts showed that the decoction extract has a high polyphenol content = 11.65±0.46 (µg EAG/mg
) and total flavonid is about 08.23±0.32 (µg QE/mg). The results of the antioxidant activity tests showed that the decocted extract has a significant capacity to neutralize free radicals with an IC50=14.7±0.62 µg/mg.

Keywords: Origanum majorana, phytochemical study, total polyphenols, total flavonoids, antioxidant activity

I. Introduction

Natural substances are currently attracting growing interest in the cosmetics, pharmaceutical and agri-food sectors, which are increasingly looking to incorporate molecules of natural origin into their products. *Origanum majorana* is an aromatic Mediterranean plant, belonging to *Lamiaceae* family, widely used in food, cosmetics, and traditional medicine because of its biological properties attributed to the active compounds it contains . It has been used for variety of diseases, including gastrointestinal disorders, ocular, nasopharyngeal, respiratory, cardiac, rheumatologic, neurological disorders and is renowned for its balancing effect on female hormones, particularly in cases of PCOS. It is also associated with a variety of health benefits and is used in food supplements and herbal infusions. Its edible parts, consisting of the head, flower and leaves, have been shown to have a variety of biological activities, including anti-cancer, hepatoprotective and anti-microbial potential and anti-inflammatory and antioxydant activities .

Figure 1. The biological properties of *Origanum majorana*

II. Methodology

In this study, we were interested in the phytochemical and antioxidant activity of *Origanum majorana*, a medicinal plant renowned for its strong medicinal power.

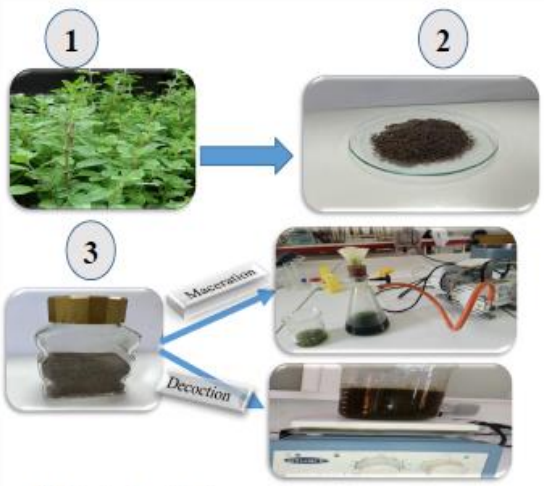
The present work was carried out on
Origanum majorana collected from the region of Mostaganem and identified by the botanist Mme SEKKEL Fatima, teacher in the Biology Department, AbdElhamid Ibn Badis University, Mostaganem.

Scientific classification	
Kingdom:	Plantae
Clade:	Tracheophytes
Clade:	Angiosperms
Clade:	Eudicots
Clade:	Asterids
Order:	Lamiales
Family:	Lamiaceae
Genus:	*Origanum*
Species:	***O. majorana***
Binomial name	
Origanum majorana	

Figure 02 : *Origanum majorana*

1. Preparation of plant extracts

After being cleaned, *Origanum majorana* leaves were dried in an incubator until they reached a constant weight. The dried samples were then broken up using an electric breaker to obtain a very fine powder.



2. Phytochemical screening

Phytochemical screening is a study that identifies the various constituents of the plant, such as flavonoids, alkaloids, tannins, saponins, free quinones, phenols, sterols and polyterpenes.

3. The quantitative study

It's focuses on the dosage of the compounds most highly present, such polyphenols, flavonoids and condensed tannins .

4. In vitro antioxidant activity evaluation using the DPPH radical capture test

III. Results

The results of the phytochemical screening showed the presence of secondary metabolites in the artichoke limbs, as illustrated in Table 01. The characterisation of secondary metabolites is based on colouring and precipitation reactions.

Table 01: Results of phytochemical screening of *Origanum majorana* leaves

	Decoction	Maceration
Free quinones	++-	+--
Flavonoïds	+++	+++
Tanins	+++	+++
saponosides	+++	++-
polyphenols	+++	--
Sterols and polyterpenes	+++	-++
Reducing sugars	-++	-+

The phytochemical screening study of *Origanum majorana* leaves extracts shows a variability in active compounds between the two extracts, which means that the leaves extracts are rich in flavonoids,tanins, saponosides, sterols and terpenes which are strongly present (+++) in the decocted extract, whereas the macerated extract is rich in tannins and flavonoids; on the other hand, we note that free quinones and reducing sugars are moderately present (++-) in the decocted extract than in the macerate extract; in the same way, we note the absence of alcaloids (---) in the two extracts.

III. 1. The Results of quantitative study

- The total phenol content of the plant in question was estimated by using gallic acid as a standard (Figure 24). They are reported in (mg/ml) of gallic acid, the absorbance is read at 756nm.

The polyphenol content (11.65 ± 0.46 µg/mg

- Flavonoid levels in the extracts were calculated using quercetin as a standard. They are given in (mg/ml) quercetin; the absorbance is read at 510 nm.

The flavonoids content (08.23 ± 0.32µg/mg)

III. 2. The Results of Antioxydant activity

The Measurement of the antioxidant activity of limbal extracts is carried out by the (DPPH) test

The DPPH test indicated that our extract demonstrated a good antioxidant efficiency with IC50 value = 14.7 ± 0.62 µg/mg)

Polycystic Ovary Syndrome (PCOS) is a prevalent metabolic disorder that is associated with an increased risk of insulin resistance among women of reproductive age. This research focuses on the methanolic extract of Origanum majorana, which is rich in various bioactive compounds that may exhibit diverse pharmacological effects. Several studies suggest that flavonoids, terpenoids, and steroids can protect red blood cells through their antioxidant properties.

IV. Conclusion

Phytochemical screening of *Origanum majorana* shown that it is rich in polyphenols, flavonoids and tannins. The Quantification of these compounds showed that the polyphenols have a high level with (11.65 ± 0.46 µg/mg, however the flavonoids have the lowest level with (08.23 ± 0.32µg/mg); The antioxidant capacity evaluated by the DPPH* free radical reduction test showed an IC50 value of (14.7 ± 0.62 µg/mg), Oregano compounds are beneficial for PCOS because they influence the inflammatory and metabolic mechanisms , which are important components of the disease, providing natural remedies to reduce symptoms and hormonal imbalances.

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Automated Form-Finding of Stable Tensegrity Structures via a Hybrid FDM-GA for Structural Health Monitoring Applications

Nor Nedjwa[1]
[1]Department of Mechanical Engineering, University of Tlemcen, Tlemcen, Algeria

Abstract :

Background: Tensegrity structures are widely used in engineering for their unique properties of being lightweight and self-equilibrated. Current form-finding methods often require separate steps for equilibrium identification and stability verification, which can be computationally expensive and limited in handling complex configurations.

Methods: This study presents a novel hybrid approach that integrates the force density method with a genetic algorithm. The proposed method uses only structural topology and member classification as inputs to automatically generate stable configurations. A constrained optimization formulation simultaneously satisfies three key conditions: kinematic indeterminacy requirements, nonlinear self-equilibrium equations, and super-stability criteria.

Results: Numerical case studies demonstrate the method's effectiveness in identifying valid self-equilibrium configurations for both planar and spatial tensegrity assemblies. The hybrid approach shows robust performance in handling various structural topologies while maintaining computational efficiency.

Conclusion: The proposed framework provides an effective solution for automated tensegrity form-finding, offering advantages in robustness and generalizability for engineering applications requiring stable lightweight structures.

Keywords:

Tensegrity Structures, Form-Finding, Genetic Algorithm, Force Density Method, Automation, Structural Optimization

Introduction :

Tensegrity structures, known for their lightweight, deployable, and self-equilibrated nature, are increasingly relevant for modern engineering challenges, including applications in smart structures and SHM [1, 2]. The primary design hurdle is form-finding—determining a stable geometric configuration under self-stress.

Existing methods, such as the Force Density Method (FDM) [3], often operate sequentially: first finding an equilibrium shape, then verifying its stability. This process can be inefficient and fails to guarantee a stable solution for novel or complex topologies, hindering automated design pipelines.

This work proposes a unified hybrid approach that merges the analytical rigor of the FDM with the global search capability of a Genetic Algorithm (GA). The core innovation is a formulation that simultaneously ensures self-equilibrium and super-stability [4], moving beyond sequential verification to true automated discovery. This is crucial for SHM-focused designs, where inherent stability dictates long-term performance and sensor placement strategies.

Material and Methods :

The problem is framed as a constrained optimization where the design variable is the vector of force densities, q. Cables have $q_i > 0$, struts have $q_i < 0$ [3]. A GA generates candidate q vectors, which are evaluated as follows:

1. Equilibrium Geometry: The FDM is applied to the candidate q to compute a corresponding geometry (x, y, z) [5].
2. Constraint Validation: This geometry is tested against three key constraints:
   - Kinematic Indeterminacy: The force density matrix D must have the correct nullity (e.g., 4 for 3D structures) [4].
   - Super-Stability: The positive definiteness of the tangent stiffness matrix is checked [2, 4].
   - Feasibility: Member lengths are constrained to avoid numerical singularities.
3. Fitness Evaluation: Solutions are ranked by a fitness function that heavily penalizes constraint violations.

This loop continues within the GA until a solution satisfying all constraints is found.

Results :

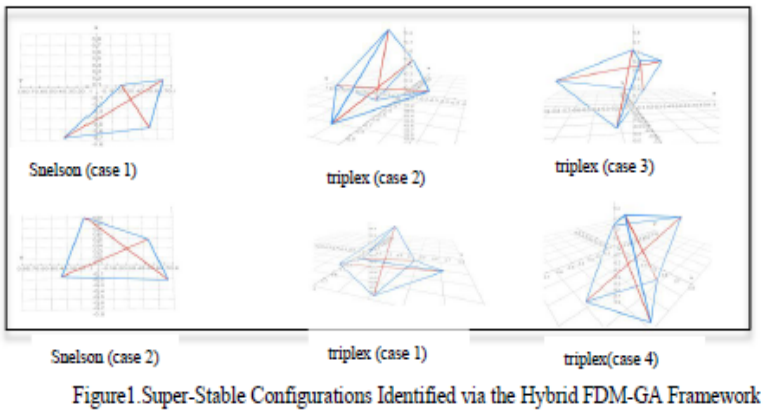

Figure1.Super-Stable Configurations Identified via the Hybrid FDM-GA Framework

Table1: Structural Characteristics and Optimization Outcomes for the Snelson X and Triplex Tensegrity Modules

module	Structural topology	Force density adaptation	Kinematic response
X snelson module	4 nodes 6 members 2 struts , 4 cables	Cables: 30.4% reduction (qi=0.5 to qf=0.348) Struts: 80.5% adaptation (qi=-2.0 to qf=-0.390)	Cable shortening to Lmin=0.455 Strut elongation to Lmax=1.414 Compliance ratio: 1.41
triplex	6 nodes 12 members 3 struts , 9 cables	Cables:72.9% reduction (qi=1.2 to qf=0.325) Struts: 84.8% adaptation (qi=-1.5 to qf=-0.228)	Cable contraction to Lmin=0.287 Strut elongation to Lmax=1.415 Compliance ration:1.92

The numerical outcomes, summarized in Table 1, provide clear evidence of the method's efficacy and versatility. For the benchmark Snelson X-Module, the algorithm successfully converged to its known stable configuration [1], validating the fundamental correctness of the approach. More importantly, for the complex Triplex module, the framework autonomously generated multiple novel and stable configurations from a random initial population, demonstrating its powerful generative capability [2]. Critically, the results reveal that the method does not merely find a single solution but efficiently maps a spectrum of mechanically distinct equilibrium states [3]. As illustrated in Figure 1 , the algorithm identified configurations optimized for high stiffness and uniform force distribution (e.g., Snelson Case 1, Triplex 2/3) along-side configurations exhibiting significant kinematic compliance (e.g., Snelson Case 2, Triplex 1/4) [4]. This ability to generate diverse structural phenotypes from a single topological input underscores the robustness and generalizability of the hybrid FDM-GA framework for both standard and intricate spatial topologies [5].

Discussion :

The primary significance of this work is the successful unification of form-finding and stability analysis into a single, automated process. By integrating the Force Density Method within a Genetic Algorithm's global search [3,5], we overcome the limitations of sequential methods that require manual iteration and separate stability checks [1,3]. This automation is a pivotal enabler for practical engineering design, where rapid evaluation of topological variants is essential [7].
The implications for Structural Health Monitoring (SHM) and adaptive structures are substantial [6]. The ability to automatically generate a palette of stable configurations allows designers to select structures pre-optimized for specific functions. A configuration with uniform prestress is ideal for a high-stiffness platform requiring precise sensor placement, while a compliant configuration is inherently suited for vibration isolation or energy dissipation [4,6]—key considerations in SHM system design. Therefore, this framework provides not just a form-finding tool, but a computational engine for designing tensegrity systems with built-in, tunable mechanical intelligence, paving the way for more resilient and adaptive infrastructure [2,7].

Conclusion :

This paper has presented a novel hybrid FDM-GA framework that successfully automates the form-finding of stable tensegrity structures. The method's key innovation lies in its unified approach that simultaneously satisfies equilibrium and stability constraints, eliminating the need for sequential analysis and manual intervention. Numerical experiments demonstrate the algorithm's robustness in generating both classical and novel stable configurations for complex topologies. By providing an efficient, automated design tool capable of producing structures with tunable mechanical properties—from high-stiffness to compliant configurations—this work significantly advances the practical implementation of tensegrity systems for engineering applications requiring adaptable, lightweight, and intelligent structural solutions, particularly in domains such as Structural Health Monitoring and adaptive infrastructure

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The Molecular Diagnosis of Breast Cancer: Toward Precision Medicine

Fayza Belmokhtar[1*], Rahma Belmokhtar [2], Abdallah Mehidi[3]

[1.] Department of Medicine, University Abdelhamid Ibn Badis, 27000 Mostaganem, Algeria
[2.] Department of Natural and Life Sciences, University Ibn-Khaldoun, 14000 Tiaret, Algeria
[3.] Department of electronic, University Abdelhamid Ibn Badis, 27000 Mostaganem, Algeria
fayza.belmokhtar@univ-mosta.dz

Abstract

Background: Breast cancer remains the leading cause of cancer-related death in women worldwide. Although imaging and histopathology have advanced, early diagnosis and accurate tumor characterization increasingly depend on molecular techniques, which enable detection of specific mutations and expression profiles linked to prognosis and treatment response.
Methods: This study assessed HER2 status in ten breast carcinoma cases collected at the Pasteur Institute of Algiers (2011–2012) to identify candidates for targeted therapy. Two techniques were used: immunohistochemistry (IHC) to detect HER2 protein overexpression and fluorescence in situ hybridization (FISH) to evaluate HER2 gene amplification.
Results: IHC showed that five cases were negative (0+/1+), one case was strongly positive (3+), and one case was equivocal (2+). FISH analysis performed on the 2+ and 3+ cases revealed HER2 gene amplification through intense red fluorescent signals.
Conclusion: HER2 evaluation is essential for managing breast tumors. IHC provides a rapid and reliable assessment for clearly negative or strongly positive cases, while FISH confirmation is required for intermediate (2+) results. Patients with strongly positive HER2 expression (3+) are the most likely to benefit from trastuzumab therapy.

Keywords

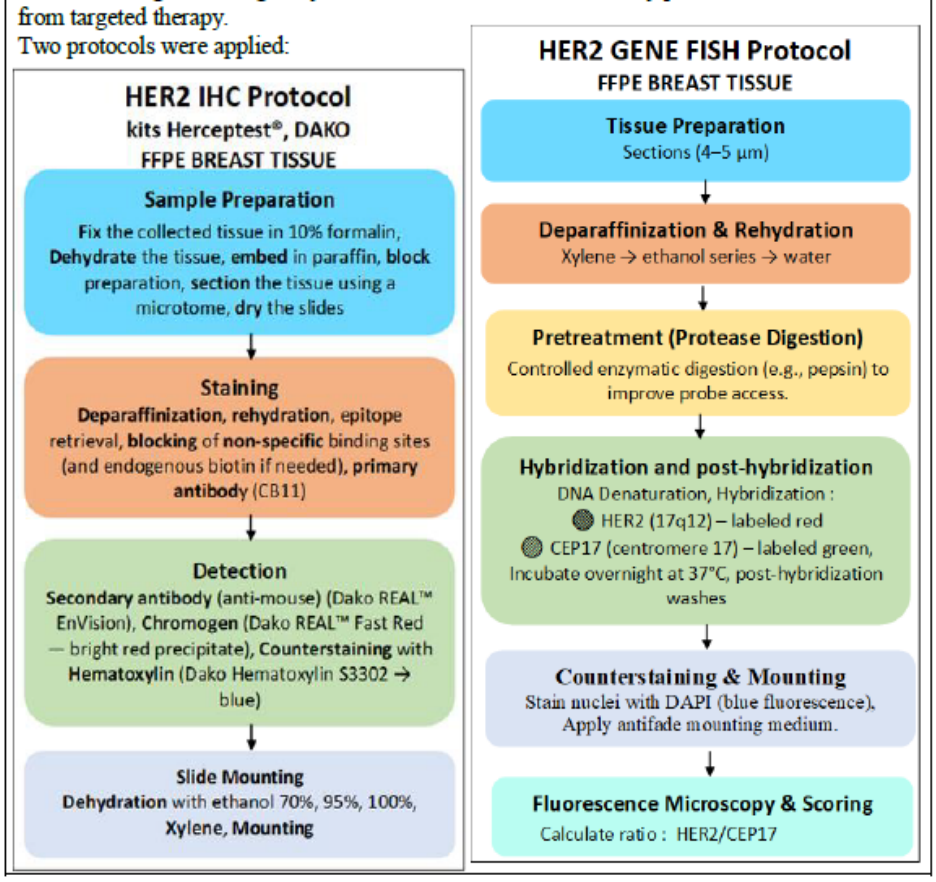
Breast cancer, Immunohistochemistry, Fluorescence in situ hybridization, HER2 gene, Herceptest

Introduction

Molecular diagnosis of breast cancer now enables precision medicine by identifying genetic alterations and specific expression profiles, such as HER2 and hormone receptors, to tailor treatments for each patient (Zhang *et al.*, 2024).
Modern approaches, including HER2 status analysis and multigene assays, provide better patient stratification and help guide targeted therapies more effectively (Yazdi *et al.*, 2024).

Material and Methods

The objective of this study was to evaluate the HER2 status in a series of breast carcinomas. Ten women were recruited from the Department of Pathological Anatomy at the Pasteur Institute of Algiers during the year 2011–2012, in order to identify patients who could benefit from targeted therapy.
Two protocols were applied:



Results

1. HER2 membrane receptor status with IHC (immunohistochemistry) test

Table 1. Result of the HER2 score evaluation

Score	Number	Percentage%	Evaluation of HER2 Protein Overexpression
0+	2	20	Negative (No staining observed)
1+	3	30	Negative (Weak staining; cells stained only on part of their membrane)
2+	1	10	Weakly positive (equivocal) (Weak or moderate complete membranous staining observed)
3+	4	40	Strongly positive (Intense and complete membranous staining)
Total	10	100	

Table 1 show that 20% of cases were negative (score 0+), 30% showed weak partial staining (score 1+), 10% were weakly positive and equivocal (score 2+), and 40% exhibited strong overexpression with intense and complete membranous staining (score 3+).

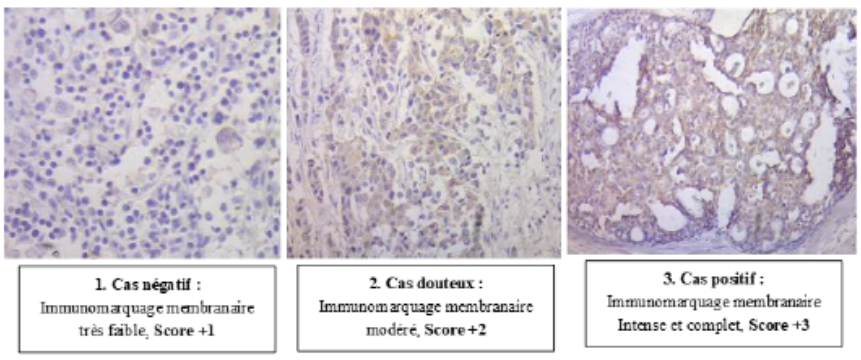


Figure 1. Overexpression of the HER2 membrane receptor

The detection of HER2 protein overexpression by IHC testing using a specific anti-HER2 antibody (Herceptest®, DAKO) on histological sections of breast tumors is indicated by membranous staining on the surface of the cells. The intensity of this staining ranges from weak to moderate to strong.

2. HER2 gene status by FISH (Fluorescence *In Situ* Hybridization) test

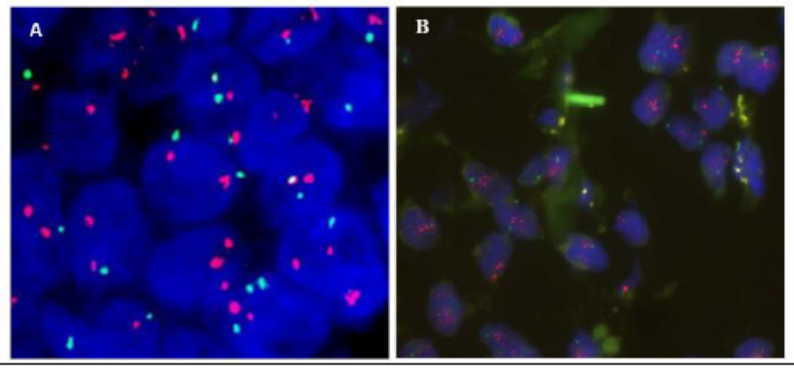


Figure 2. Evaluation of HER2 gene status by FISH test in breast tumors. A: Absence of HER2 gene amplification; B: Presence of HER2 gene amplification. Red signals correspond to HER2 gene copies, while green signals correspond to the centromere of chromosome 17.

FISH analysis performed on cases with 2+ and 3+ score revealed HER2 gene amplification through intense red fluorescent signals.

Discussion

The integration of both techniques highlights the essential complementarity between protein expression assessment (IHC) and genomic confirmation (FISH). This diagnostic accuracy is crucial not only for identifying classic HER2-positive tumors (3+ / FISH+) but also for recognizing **HER2-low** tumors (1+ or 2+ non-amplified), which can now benefit from novel targeted therapies such as trastuzumab deruxtecan (Modi et al., 2022).

Conclusion

The combined analysis of IHC and FISH enables an accurate assessment of HER2 status, ranging from complete absence of expression to clear gene amplification. This integrated approach ensures reliable tumor classification and effectively guides therapeutic decisions, particularly with the emergence of targeted treatments for both HER2-positive and HER2-low tumors according to recent recommendations.

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Antiacetylcholinesterase activity of *Helianthemum apenninum* (L.) Mill. and *Rochelia disperma* (L.f.) K.Koch

Khadidja Soltani[1], Houari Benamar [2,3], Zahia Benmouna [3,4]

[1]Department of Biological Sciences, Faculty of Sciences and Technology, University of Relizane, Algeria
[2]Department of Living and Environment, Faculty of Natural and Life Sciences, University of Sciences and Technology of Oran Mohamed Boudiaf, PO Box 1505, El M'Naouer, 31000 Oran, Algeria
[3]Laboratory of Research in Arid Areas, Faculty of Biological Sciences, University of Sciences and Technology of Houari Boumediene, PO Box 32, El Alia, Bab Ezzouar, 16111 Algiers, Algeria
[4]Department of Biology, Faculty of Natural and Life Sciences, University of Oran1, PO Box 1524, El M'Naouer, 31000 Oran, Algeria

Abstract

Abstract:
Background: The aim of this study was to evaluate the acetylcholinesterase (AChE) inhibitory activity of two wild plants harvested from different areas in Algeria. These plants are used in traditional medicine for burns [1].
Methods: The different plant extracts were obtained by Soxhlet extraction using ethyl acetate, methanol and methanol-water as solvents. The AChE inhibitory activity was evaluated spectrophotometrically using the Ellman's method [2].
Results: The findings showed that the ethyl acetate extract of Helianthemum apenninum (47.29 % of inhibition) and methanol extract of Rochelia disperma (45.36 % of inhibition) showed almost the same AChE inhibitory activity. They possessed moderate AChE inhibitory activity at 400 and 500 µg/mL. Interestingly, all the Rochelia disperma extracts exhibited inhibitory activity against AChE.
Conclusion: Helianthemum apenninum and Rochelia disperma extracts had the ability to inhibit AChE, which can be highly related to its phytochemical constitutes. Phytochemical investigations combined with bioassay fractionation are needed to characterize the active constituents of the studied extracts.

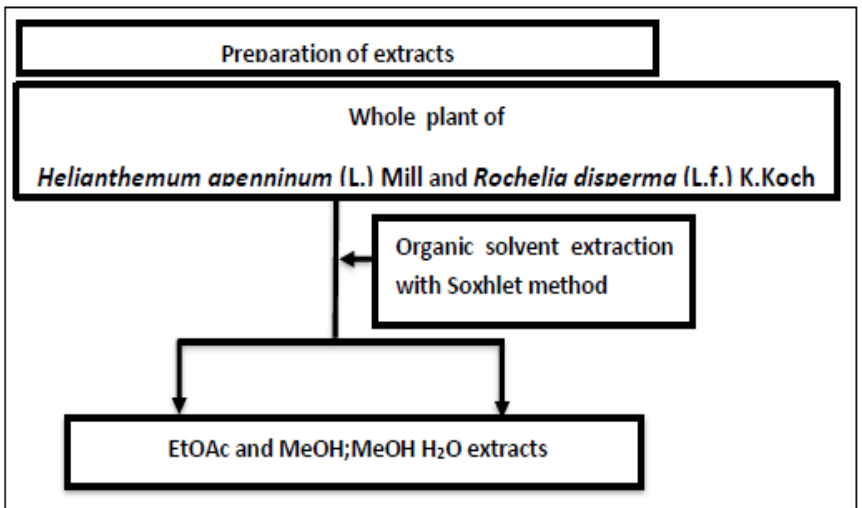
Keywords:

Wild plant extracts, phytochemicals, acetylcholinesterase, Ellman's method.

Introduction

- Alzheimer's disease is a neurodegenerative condition discovered by Alois Alzheimer in 1906, characterized by progressive neuron loss and irreversible decline in mental function and memory. While currently incurable, the disease's progression can be slowed through acetylcholinesterase inhibitors. Alzheimer's patients exhibit significantly reduced acetylcholine levels, and since acetylcholinesterase maintains nervous system balance, inhibiting this enzyme increases synaptic acetylcholine concentrations by preventing its degradation (Houghton et al., 2006). Current research focuses on identifying compounds that can enhance cholinergic activity, with existing medications targeting acetylcholine breakdown inhibition as their primary therapeutic mechanism.
- *Helianthemum apenninum* (L.) and *Rochelia disperma*:is a wild Algerian plant that live in arid desert areas

Material and Methods



Anticholinesterase activity Essai:

A spectrophotometric assay was performed to evaluate the acetylcholinesterase (AChE) inhibitory activity of plant extracts. The method utilized DTNB reagent (3 mM in Buffer C) and acetylthiocholine iodide (ATChI) as substrate (43.37 mg in 10 mL distilled water). Three buffer systems were prepared: Buffer A (Tris-HCl 50 mM, pH 8), Buffer B (Buffer A + 0.1% BSA), and Buffer C (Buffer A + 0.1 M NaCl + 0.02 M $MgCl_2 \cdot 6H_2O$). The enzyme solution consisted of 15 µL AChE diluted in 0.052 mL Buffer B.

The test protocol involved mixing 295 µL Buffer B, 100 µL AChE enzyme, 5 µL plant extract, and 500 µL DTNB, followed by incubation at 37°C for 15 minutes. Then, 100 µL ATChI was added wave by wave. A blank control replaced enzyme and extract with Buffer B and methanol. Absorbance was measured at 405 nm for 4 minutes (412 nm reference). Multiple extract concentrations (20-100 mg/mL) were tested by varying extract volumes (40-160 µL) and methanol volumes (160-40 µL) to assess dose-response inhibitory activity.

Results

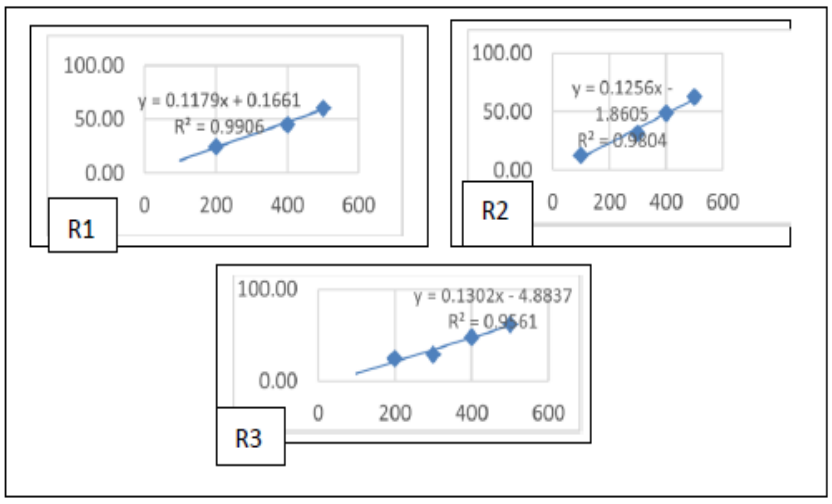


Figure1. Antiacetylcholinesterase activity of *Rochelia disperma (R1)* EtOAc,(R2) MeOH ,(R3) MeOH H_2O Extracts

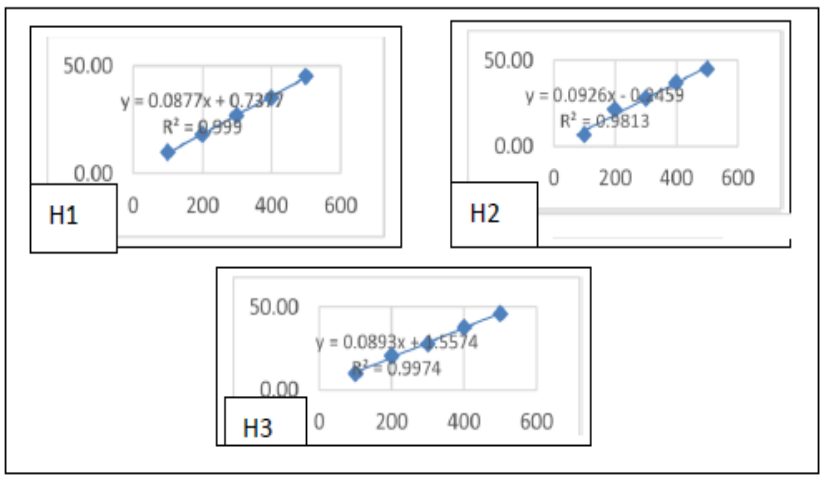


Figure1. Antiacetylcholinesterase activity of *Helianthemum apenninum* (L.) *(H1)* EtOAc,(H2) MeOH,(H3) MeOH H_2O Extracts

The findings showed that the ethyl acetate extract of Helianthemum apenninum EtOAc exract H1 demonstrated significantly superior acetylcholinesterase inhibitory activity compared to *Rochelia disperma* MeOH extract R2 across all tested concentrations (100-500 µg/ml). The IC50 value for H1 was 419.03 ± 5.34 µg/ml, which is approximately 24% lower than R2's IC50 of 548.93 ± 11.07 µg/ml, indicating that H1 requires a lower concentration to achieve 50% enzyme inhibition. At the highest tested concentration of 500 µg/ml, H1 achieved 61.63 ± 1.16% inhibition while R2 reached only 45.36 ± 0.47%, representing a difference of over 16 percentage points. This difference in inhibitory activity increased progressively with rising concentrations, suggesting that H1 maintains superior efficacy throughout the concentration range. Overall, H1 exhibits greater potency as an anti-acetylcholinesterase agent, making it the more effective candidate for potential therapeutic or research applications targeting this enzyme.

Conclusion

Helianthemum apenninum and Rochelia disperma extracts had the ability to inhibit AChE, which can be highly related to its phytochemical constitutes. Phytochemical investigations combined with bioassay fractionation are needed to characterize the active constituents of the studied extracts

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Formulation and expectorant effect of a semi-solid topical preparation based on essential oils

Amel Toubane, Assia Mechedal, Boukhobza Chaima and Daoud Kamel

[1.] Team of pharmaceutical process, Laboratory of Transfer phenomena, Faculty of Mechanical engineering and Process engineering, Algiers, Algeria

Abstract

This study aimed to develop a natural topical balm with expectorant activity using peppermint, thyme (thymol-rich), and rosemary essential oils. Pre-formulation testing with different excipients identified shea butter as the optimal base, providing good organoleptic properties, skin-compatible pH (5), and adequate viscosity. A clinical study with 40 participants suffering from chesty cough showed that the formulated balm produced a significantly faster expectorant effect than both a positive control ($p = 1.67 \times 10^{-8}$) and a reference medicine ($p = 0.0043$). These results demonstrate the enhanced efficacy of this essential-oil-based balm as a natural alternative for cough relief.

Keywords:

Essential oil, balm, cough, formulation.

Introduction

Cough is a frequent symptom of respiratory discomfort, and natural alternatives are increasingly sought to reduce reliance on conventional treatments. Essential oils such as peppermint, thyme, and rosemary possess recognized expectorant and soothing properties, making them suitable for topical formulations. This work focuses on developing a natural semi-solid balm using these oils and evaluating its clinical effectiveness in relieving chesty cough.

Material and Methods

Peppermint essential oil, Thyme essential oil with thymol and Rosemary essential oil were used as natural active ingredients, pre formulation assays have been explored and evaluated in order to find the basic formula using differents excipients, physicochemical tests and viscosity test have been conducted to choose the basic formula. A clinical study was conducted to evaluate the efficacy of the expectorant balm. A panel of 40 participants with symptoms of chesty cough have been recruited and subject to treatment for a specified period of time

Results

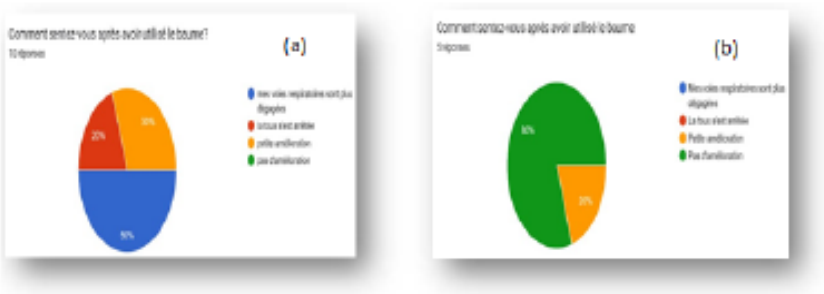

Figure1.Panel results about cough evolution before and after the treatment

Table. Necessary time for the expectorant effect

	Control	Expectorant balm	Reference
Necessary time for the expectorant effect (days)	11.9±0.57	3±0.2*	3,8±0.37*

Resuluts are shown as the mean± standard error of the mean (SEM), *p-valu<0.01 considered as significant compared to the control group.

Discussion

the results showed that the balm with shea butter have shown the best results in term of organoleptic properties, pH with a value of 5 corresponding to the skin pH, ideal for a topical form, this pH can also help maintaining product stability and preventing bacterial growth. A viscosity of 8480 have been found due to the presence of shea butter which has a solid texture at room temperature due to its high content of saturated and unsaturated fatty acids.

During the clinical study the time required to observe the expectorant action of the formulated balm, the reference medicine, the placebo and the positive control group was measured and compared. The comparing of the balm group with the positive control group have shown a p-value of 1.67 * 10–8 ($p<0.05$) demonstrating the effectiveness of the expectorant balm, and while comparing the balm group with the reference group, a p-value of 0.0043 (<0.05) have been found demonstrating that The balm has greater effectiveness and faster action against coughs.

Conclusion

The expectorant balm has a faster expectorant effect than conventional treatments due to its composition, which combines four essential oils known for their expectorant action.

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Characterisation of bioactive compounds in hexane extract of *Agrimonia eupatoria* L. leaves using ATR-FTIR spectroscopy

Hadjer Chenini-Bendiab [1,*] and Noureddine Djebli [1]

[1]Pharmacognosy & Api-Phytotherapy Laboratory. Department of biology. Faculty of SNV Mostaganem University-27000 –Algeria

Abstract

Agrimonia eupatoria L. is a plant known for its traditional medicinal uses. Its therapeutic properties are due to its rich composition of various molecules. The objective of our study is the phytochemical characterisation of the bioactive compounds present in the hexane extract of *A. eupatoria* obtained using the Soxhlet method. Qualitative phytochemical analyses based on colorimetric methods were carried out, as well as the determination of contents in phenolic compounds such as total phenols, total flavonoids, flavonols, condensed and hydrolysable tannins. In addition, spectroscopic analysis was performed using ATR-FTIR to identify the functional groups present in the obtained extract. The results of the quantitative phytochemical analysis revealed a wide variety of phenolic compounds in our extract. The hexane sample revealed the phenolic content of the following analysed compounds: 1.716 mg GAE/gDM for polyphenols, 0.113 mg QE/gDM for flavonoids, 0.03 mg QE/100gDM for flavonols, 0.62 mg CE/gDM for condensed tannins and 1.18 mg TAE/gDM for hydrolysable tannins. ATR-FTIR spectroscopy analysis revealed the presence of functional groups characteristic of active substances such as phenolic compounds, phenolic- derived aromatic compounds, monoterpenes (pinene), and sesquiterpenes. The obtained data highlight the importance of *Agrimonia eupatoria* L. as a source of bioactive molecules such as polyphénols and pave the way for its pharmacological valorization. In the future, it would be interesting to study other extraction methods using more polar solvents.

Keywords:

Agrimonia eupatoria L., extraction, phytochemical analyses, phenolic compound, ATR-FTIR.

Introduction

Medicinal plants are known as a very rich source of bioactive substances. Among these are phenolic compounds, which are very widespread in the plant kingdom and constitute the most abundant class of secondary metabolites. They are recognised for their numerous proven therapeutic effects, including antibacterial, antioxidant, anti-inflammatory and other recently elucidated effects. The aim of our study is to highlight and determine the phenolic compound content in the hexane extract of *Agrimonia eupatoria* L. leaves, as well as to identify functional groups through FTIR spectroscopic analysis - ATR (Fourier transform infrared spectroscopy with attenuated total reflection).

Material and Methods

Our study focused on the leaves of the plant *Agrimonia eupatoria* L. of the Rosaceae family. The sample underwent a 5% extraction using a Soxhlet extractor with hexane (Hex) as the solvent. The extract was then concentrated by rotary evaporation at 40°C and subsequently lyophilised. Qualitative phytochemical analyses using a colorimeter were performed, as well as the determination of the levels of certain phenolic compounds (total polyphenols[1], flavonoids[2], flavonols[3], condensed and hydrolysable tannins[4]) containedin the agrimony extract studied.

Infrared spectroscopy (FTIR-ATR) analyses were also performed to determine the functional groups that mainly constitute the bioactive compounds.

Results

➢ **Table: Results of qualitative phytochemical analysis tests contained in hexane extract of *A. eupatoria*.**

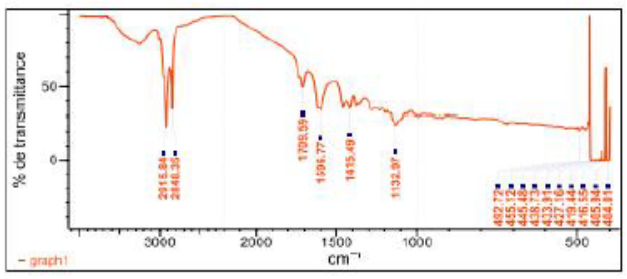
	Total Polyphenols	Total flavonoïds	Flavonols	Tannins Catechins	Tannins Hydrolysable
Hex-Sox	+++	+++	+++	+++	++

➢ **Table: Total phenol, total flavonoid, flavonol, catechin and hydrolysable tannin content in hexane extract of *A. eupatoria*.**

Extract	TP (mgGAE/gDM)	TF (mgQE/gDM)	TFO (mgQE/100gDM)	TC (mgCE/gDM)	TH (mgTAE/gDM)
Hex-Sox	1,7167	0,1136	0,03	0,6204	1,1867

➢ **Table: Ratio of phenolic compounds/total phenolics in hexane extract of *A. eupatoria*.**

Extraits	TF/TP	TFO/TF	TC/TP	TH/TP
Hex-Sox	0,0661	0,0028	0,3614	0,6913



➢ **Figure: FTIR-ATR spectrum of hexane extract of *A. eupatoria*.**

Discussion

❖ According to the results obtained, low levels of phenolic compounds were found in the plant extract studied (Hex-Sox). This could be explained by the low solubility of phenolic compounds in non-polar solvents.

❖ Analysis of the FTIR spectrum of the hexane extract of *A. eupatoria* reveals the presence of several characteristic absorption bands, allowing the identification of specific functional groups . The bands at 2915.84 cm^{-1} and 2848.35 cm^{-1} are typicalof the stretching vibrations of C–H bonds corresponding to alkanes (R–CH_2–R and Ph–CH_3). The presence of a peak around 1709.59 cm^{-1} confirms the C=O stretching vibration, the presence of esters (COO) or a carboxylic acid (NH_2RCOOH). While the peak at 1132.97 cm^{-1} could be associated with C–O stretching vibrations, typical of ethers or esters

Conclusion

Phytochemical analyses have revealed the presence of bioactive phenolic compounds in *A. eupatoria*, suggesting the potential of this plant as a promising source. FTIR-ATR spectroscopy analysis confirmed the presence of these molecules by identifying the characteristic functional groups associated with secondary metabolites. All of these data encourage further investigation to explore the potential applications of this plant for therapeutic interest.

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The Biguanide Meformin Attenuate Heart, Lung and Liver Injury Induced by the β-Adrenoceptor Agonist Isoproterenol in Non-Diabetic Rats

Goumeri Sarah[1], Izem Malika[1], Djerdjouri Bahia[1]

1- *Laboratory of Cellular and Molecular Biology, [1]Faculty of Biological Sciences, University of Science and Technology Houari Boumediene, Algiers, Algeria*
Correspondence: goumerisarah@gmail.com

Abstract

Circulating catecholamines and oxidative stress play a critical role in cardiac dysfunction and multi-organ damage. Metformin, beyond its hypoglycemic effects, is known for its protective properties at both cellular and molecular levels, particularly through its anti-inflammatory and antioxidant mechanisms. This study aimed to investigate the modulatory effects of metformin on Isoproterenol (ISO)-induced cardiac dysfunction and associated lung and liver injury in non-diabetic rats.

Keywords:

Cardiac dysfunction, Isoproterenol, Metformin, Oxidative stress Organ damage, inflammation

Introduction

Cardiac dysfunction is a common complication contributing to hypoperfusion and multi-organ damage including the lungs and liver. Metformin (MET), a commonly used oral anti-diabetic drug, is known for its pleiotropic antioxidant and anti-inflammatory effects. Isoproterenol (ISO) targets β2-adrenergic (AR) receptors. These receptors are widely distributed in the lungs and liver.

This study explored the role of metformin in ISO-induced lung and liver injuries associated with heart damage in rats.

Material and Methods

Male wistar rats were assigned into control, sham, ISO and pretreated orally with metformin (MET, 100 mg/kg twice daily for 14 days) groups. ISO was injected subcutaneously (5 mg/kg, sc) on the 12th, 13th and 14th day.

Heart, lung and liver tissues were recovered after sacrifice at day 15 and processed for biochemical and histological analyses.

Results

Group	Control	ISO	Met+ISO
CK activity IU/mg prot	5.819±0.52	4.14±0.77***	5.53±0.82**
AST (U/min/mg prot)	3.200±0.21	1.996±0.5**	2.600±0.57
ALT (U/min/mg prot)	1,249±0.06	0.683±0.23**	1.135±0.46#

Table1: Effect of metformin on the status of AST, ALT in liver tissue and CK in heart tissue of ISO induced rats.

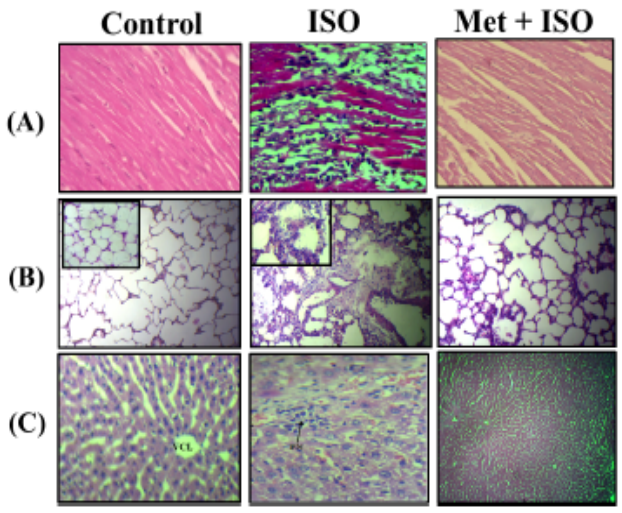
Metformin prevents all of the deleterious effects of ISO. Effectively metformin restores activities of cardiac and liver enzymes ($P < 0.001$, 0.05), attenuates heart, hepatic and pulmonary histological changes, significantly reduces inflammation and restores redox status in all organs.

ISO induces heart dysfunction, produces profound lung and liver damage

Cardiac dysfunction as measured by decreased creatine kinase (CK) activity in ISO heart group (P <0.001), also the liver tissue produced a significant fall in the levels of AST and ALT (P < 0.01).

Histological evaluation showed that interstitial edema and increased leukocyte infiltrate in heart, lungs and liver tissues. Moreover, ISO increases myeloperoxidase activity (MPO) (P < 0.001, 0.01) and malondialdehyde (MDA) (P < 0.001), index of a neutrophil infiltration (PN) and lipids peroxidation, respectively in all organs. We observe that ISO increases nitrites (NO) levels (P < 0, 001) in heart and lung (P < 0.001, 0.01) and depletes endogenous antioxidant glutathione (GSH) (P < 0.001, 0,01) in heart and liver respectively.

Figure1. **Metformin** protects heart, lungs and liver against **histopathological changes. H&E staining** photomicrograph of cardiac (A), liver (B) and lung (C) sections (100 and 400 × magnification).



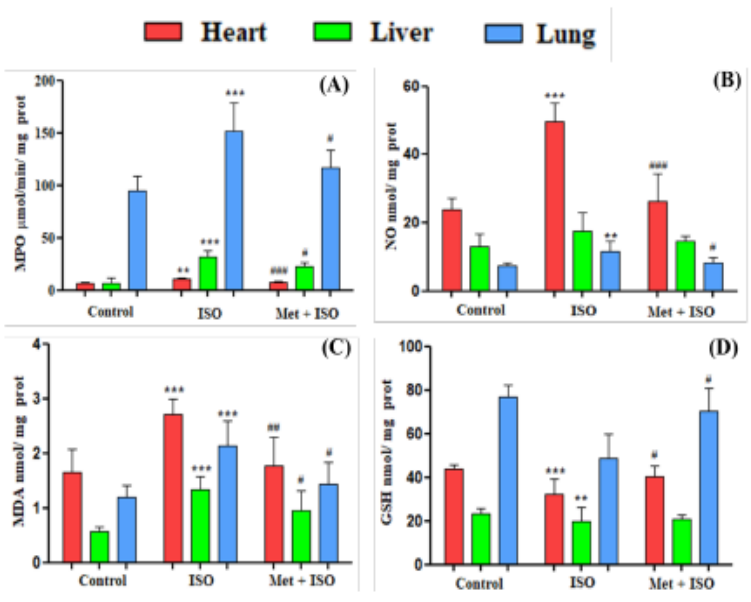


Figure 02: Assessment of oxidative stress. Met decreased inflammation and oxidative stress in ISO induced cardiac, liver and lung damage. (A) MPO activity. (B) NO, (C) MDA and (D) GSH amount.

Conclusion

Based on the findings, metformin significantly mitigates the structural and functional impairments in heart, lung and liver tissues induced by isoproterenol. These results suggext that metformin may be a potential adjunct therapy to reduce tissue damage and the associated inflammatory response cardiovascular diseases.

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COX-2 Inhibition Underlies the Anti-Inflammatory Activity of *Ammoides verticillata* Essential Oil: Evidence from *in Vivo* and Computational Analyses

Imene Derardja[1,2], Redouane Rebai[1,3]

[1.] Department of biology, Faculty of natural life science, earth and universe sciences, Mohamed Khider University Biskra, Algeria

[2.] Laboratory Promotion of Innovation in Agriculture in Arid Regions (PIARA), Mohamed Khider University, PO Box 145 RP, 07000 Biskra, Algeria

[3.] Laboratory of Biotechnology, National Higher School of Biotechnology, Constantine 25000, Algeria

Abstract

Inflammation is a complex biological response implicated in various chronic disorders, and cyclooxygenase-2 (COX-2) plays a pivotal role in mediating the synthesis of pro-inflammatory prostaglandins. Owing to the adverse effects associated with synthetic COX-2 inhibitors, plant-derived essential oils have emerged as promising natural alternatives. This study aimed to investigate the anti-inflammatory potential of *Ammoides verticillata* essential oil (AVEO), a carvacrol-rich chemotype, through complementary *in vivo* and *in silico* approaches, with a particular focus on COX-2 inhibition. The *in vivo* anti-inflammatory activity of AVEO was evaluated using the carrageenan-induced paw edema model in rats, with doses of 50, 100, and 200 mg/kg administered orally. Edema inhibition was recorded over 5 hours and compared to the standard drug diclofenac. In parallel, molecular docking studies were conducted using Schrödinger software to predict the binding affinity and interaction profiles of major AVEO constituents (carvacrol, thymol, *p*-cymene, γ-terpinene, and limonene) within the active site of COX-2. The compounds were subsequently examined by MM/GBSA calculations to further reinforce docking findings and the top-performing compounds were subjected to molecular dynamics (MD) simulations to assess the stability and strength of protein-ligand complexes.

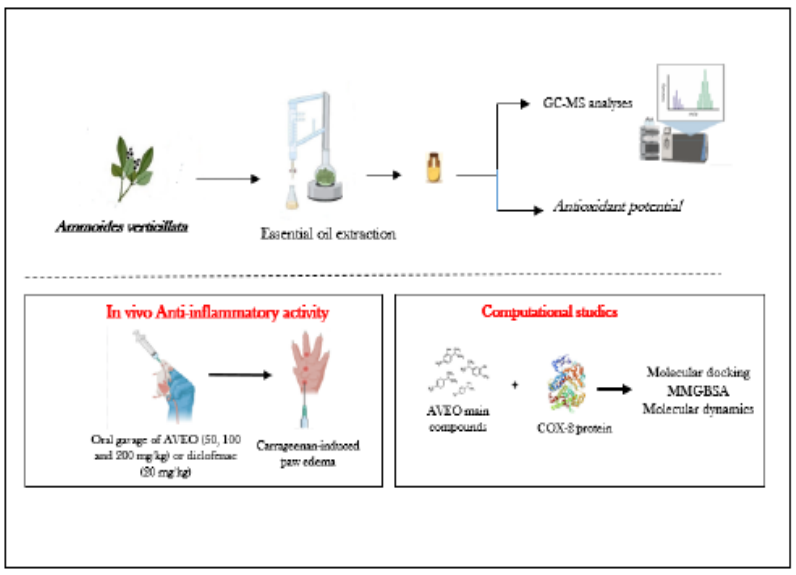
In vivo experiment demonstrated a dose-dependent reduction in paw thickness, with the 200 mg/kg dose producing a significant anti-inflammatory effect (52.23%) comparable to that of diclofenac. Molecular docking analysis revealed strong binding affinities of AVEO's principal constituents, particularly carvacrol and thymol, toward the COX-2 active site (-7.381 and -6.939 Kcal/mol, respectively), where they formed stable hydrogen bonds with key catalytic residues such as Ser530. The MM/GBSA free energy analysis further substantiated these interactions, indicating energetically favorable binding of AVEO's main compounds. Moreover, MD simulations confirmed the stability of the carvacrol-COX-2 and thymol-COX-2 complexes, reinforcing their potential as potent natural COX-2 inhibitors.

The combined *in vivo* and *in silico* findings highlight the potent anti-inflammatory potential of *Ammoides verticillata* essential oil, primarily attributed to its phenolic monoterpenes. These results support the traditional use of this species and position AVEO as a promising natural source of COX-2 inhibitors, warranting further exploration for safe and effective anti-inflammatory therapeutics.

Keywords:

Ammoides verticillata, essential oil, Anti-inflammatory activity, COX-2 inhibition, molecular docking.

Material and Methods



Results

The results showed that AVEO exhibited significant anti-inflammatory activity, specifically, at the dose 200 mg/kg, it produced a 52.23% reduction in paw edema, a level of inhibition statistically comparable to that achieved by diclofenac (60.86%, $p > 0.05$) (Figure 1).

Molecular docking and MMGBSA calculation further corroborated the observed effect, revealing carvacrol and thymol as significant binders to COX-2. Both compounds exhibited high affinity toward COX-2, with docking scores of -7.381 and -6.939 Kcal/mol, respectively. Interaction visualization showed that they established hydrogen bond with Ser530, and several hydrophobic contacts with Trp387, Tyr385, Val349, Leu352, etc.

Molecular dynamics simulation confirmed that carvacrol and thymol may be potent COX-2 inhibitors, as reflected by their dynamic stability and consistence of their interactions over time.

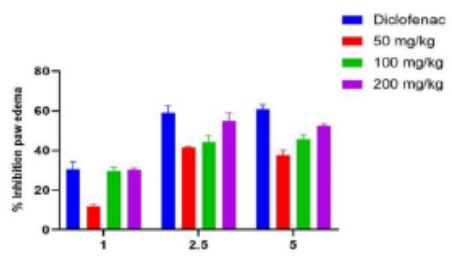


Figure 1. Anti-inflammatory effects of AVEO in carrageenan-induced paw edema model.

Table 1. Docking and MMGBSA results of the top compounds.

Compound	Docking score	MMGBSA
Diclofenac	-7.837	-34.62
Carvacrol	-7.381	-51.50
Thymol	-6.939	-42.35

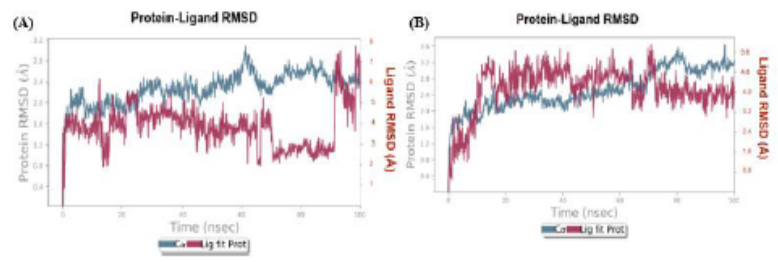


Figure 2. RMSD plots of the top hits: (A) carvacrol plot; (B) thymol plot.

Discussion and Conclusion

The present findings demonstrate that AVEO exerts a pronounced anti-inflammatory effect in vivo, with the 200 mg/kg dose inducing a 52.23% reduction in paw edema, an efficacy statistically comparable to diclofenac, highlighting its potential as a natural alternative to conventional NSAIDs. This activity appears to be dose-dependent and is strongly supported by in silico analyses, which identified carvacrol and thymol as key contributors to this effect. Both compounds exhibited high binding affinity toward COX-2 and formed stable interactions within its active site, including hydrogen bonding with the crucial Ser530 residue and multiple hydrophobic contacts, suggesting effective inhibition of prostaglandin synthesis. Molecular dynamics simulations further confirmed the stability and persistence of these interactions over time, reinforcing their potential as potent COX-2 inhibitors. Overall, the convergence of in vivo and computational results indicates that AVEO's anti-inflammatory activity is largely mediated through COX-2 inhibition by its major bioactive constituents, positioning it as a promising and potentially safer plant-based therapeutic option for managing inflammatory conditions.

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Analysis of pregnancy-related complications in women with diabetes

Ghania Tiboura[1]

[1] Ph D in Applied biological sciences ; Laboratory of Nutrition, Pathology, Agrobiotechnology and health
Djillali Liabes University; Sidi Bel Abbes. Algeria

gtiboura@gmail.com

Abstract

Pregnancy in a diabetic woman increases the risk of diabetes-related complications for the mother and the child. The general objective of this study is to characterize the association of pre-existing diabetes with pregnancy in our population by estimating risk factors , as well as to determine the course of pregnancy and delivery, and to identify maternal and neonatal complications.

Keywords:

type 1 diabetes, type 2 diabetes, pregnancy, obstetric complications, neonatal complications

Introduction

Diabetic pregnancy is a high-risk pregnancy that can expose diabetic women and their babies to complications. (French Diabetes Federation, 2018)
Infants born to mothers with pre-existing type 1 or type 2 diabetes are at greater risk of congenital abnormalities, perinatal mortality , and significant short- and long-term morbidity. Pregnant women with pre-existing diabetes are at increased risk of perinatal morbidity and diabetic complications. The relationship between glycemic control and health outcomes for mothers and infants suggests that preconception care for these women may be beneficial. (Feig.D et al., 2018)
Malformations, particularly cardiac malformations, are more common in babies born to mothers whose diabetes is not well controlled during pregnancy. (Billionnet.C et al., 2014)

Material and Methods

This is a descriptive comparative epidemiological study; of 70 diabetic pregnant women (type 1 and 2) and 67 non-diabetic pregnant control women followed in the obstetrician and gynecologist department at sidi bel abbes maternity hospital.

Women with type 1 diabetes: 31 cases (44%)
Women with type 2 diabetes: 39 cases (56%)
The controls were women (70 cases) without diabetes who were monitored at the same maternity ward during the same period.

Excel 2013 and SPSS 22 software were used to process the study data.

Results

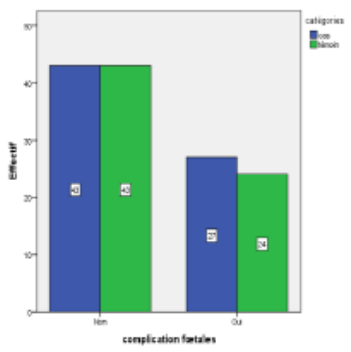
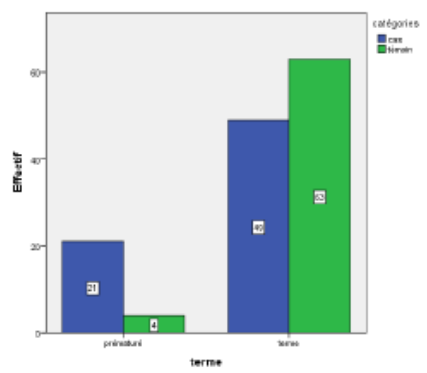


Figure 1: Distribution of newborns according to the presence of fetal complications



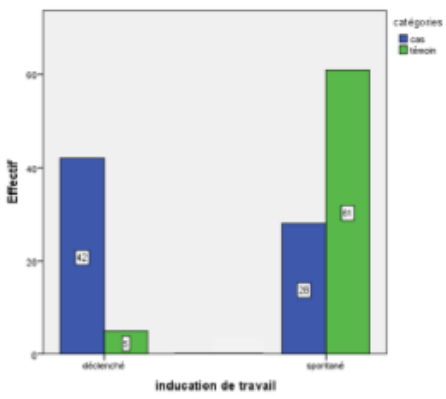


Figure 03: Distribution of patients according to work indication

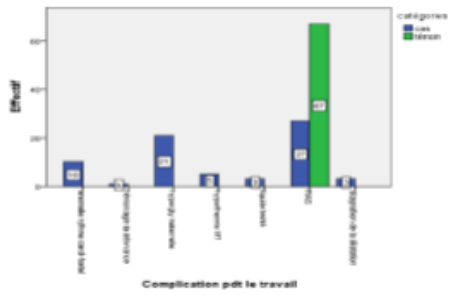


Figure 04: Distribution of patients according to the presence of complications

Discussion

Women with pre-existing diabetes are more likely to undergo premature delivery for obstetric or medical reasons, cesarean sections, and surgical procedures(Raul.A.2020). These results aresimilar to our findings. Nearly 55.56% of deliveries among diabetic women were by cesarean section. For Kébé, Tonouéhoua, Lahlou, and Moumhil, this is not far from our results, which are close to 60%.The risk of excess fluid and hydramnios (with premature delivery as the main consequence)is increased in cases of poor glycemic control (Busch.M et al 2001). These results are identical to those of our study.

Conclusion

Reduction of diabetes risk during pregnancy is associated with degree of blood glucose control during pregnancy and delivery. It is also necessary to plan pregnancy in order to achieve normal levels of sugar in the blood before pregnancy.

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Valorization of the biological activities of a medicinal plant "artemisia herba alba"

Lilia Mouhi[1], Amel Toubane[2], Kenza AZINE [3]

[1.] Laboratory of Reaction Engineering, Department of Pharmaceutical and Environmental Engineering, Faculty of Mechanical Engineering and Process Engineering, University of Sciences and Technology (USTHB), Bab Ezzouar, Algiers 16111, Algeria

[2.] Laboratory of Transfer Phenomena, Department of Pharmaceutical and Environmental Engineering, Faculty of Mechanical Engineering and Process Engineering, University of Sciences and Technology (USTHB), Bab Ezzouar, Algiers 16111, Algeria

[3.] Pharmacology and Toxicology Laboratory, SAIDAL Research and Development Center, Algiers, Algeria.

Abstract

With the rising prevalence of diabetes in Algeria and the side effects of conventional treatments, alternative therapies are needed. This study evaluated the antioxidant and antidiabetic potential of an ethanolic extract of *Artemisia herba alba* ("Chih"). Harvested in Mila (Algeria), the extract was rich in polyphenols (125 mg GAE/g). In vitro tests showed significant antioxidant activity (IC_{50}=1.471 mg/mL). In streptozotocin-induced diabetic rats, the extract significantly lowered blood glucose without toxicity. The findings highlight *A. herba alba* as a promising, safe source of natural antidiabetic and antioxidant compounds.

Keywords

Artemisia herba alba, Antioxidant activity, Antidiabetic activity

Introduction

The global rise in diabetes demands safer therapeutic alternatives. This study investigates *Artemisia herba alba*, a traditional Algerian medicinal plant, for its potential as a natural antidiabetic and antioxidant agent. Through phytochemical and pharmacological analyses, we assess its polyphenol content, free-radical scavenging capacity, and hypoglycemic effect in a diabetic rat model, providing a scientific basis for its traditional use.

Material and Methods

The aerial part of the studied plant was harvested in April 2022 in the Ouled Khelouf region, south-east of Mila (ALGERIA). The animals used are female "Wistar" strain rats, supplied by the Institut Pasteur of Algeria and are of SPF (Specific Pathogen Free) health status.

The total polyphenol content of the extracts obtained by maceration in ethanol was determined using the Singleton and Rossi (1965) method using the Folin-Ciocalteu reagent. The anti-radical potential was evaluated using the DPPH radical scavenging test.

Diabetes was induced in the rats by intraperitoneal injection of a streptozotocin solution. The blood glucose level of each rat was measured from the retro-orbital sinus of the animal's eye. The toxicity evaluation was conducted in accordance with the guidelines of the Organisation for Economic Co-operation and Development (OECD, 2001).

Results

Table 1. Clinical signs of toxicity per animal group

Dose	Respiratory distress	Coma	Tremors	Mortality
2000 (mg/kg bw)	–	–	–	–

Table 2. Effect of the extract and Glucophage® on the blood glucose levels in diabetic rat

Blood glucose levels (mg/dl)			
Groups	**Initial day**	**Day 7**	**Day 14**
Diabetic control	3.45±0.31	3.89±0.11	3.96±0.43
Treated with ethanolic extract	3.42±0.12	3.75±0.07	2.81±0.26
Positive control (Glucophage) (0.5 mg/kg)	3.48±0.14	2.44±1.63	2.68±1.85

Results are shown as the mean± standard error of the mean (SEM).

Discussion

Our results showed that the extract was included in the category of non-toxic substances (no mortality was recorded during the 14 days of treatment). The quantitative estimation of total polyphenols in the analyzed extract shows that it is rich in these metabolites (equal to 125 mg of gallic acid/mg of extract). The reducing power of the ethanolic extract is represented by an IC50 equal to 1.471 mg/ml.

The results of the hypoglycemic effect indicate that the studied plant has a significant hypoglycemic effect compared to the results obtained from the control. The extract from Artemisia herba alba contained abundant polyphenols, which could be responsible for its various biological activities.

Conclusion

Diabetes treatment is expensive especially for long-term management. Therefore, it seems necessary to search for new drugs and solutions, like natural products that may help support treatment and contribute to help manage blood sugar levels. The studied plant can be considered as antioxidant and antidiabetic agents, in addition to being non-toxic.

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Cutis Marmorata Telangiectatica Congenita Associated with Infantile Myofibromatosis: A Case Report

Raouia roumili1,Rima Dali Osmane1 ;Khouloud Afeissa 1;MiraChikhaoui1,Houria Sahel1

1Bab El Oued University Hospital, bab el ouad, Algeria

Introduction

Infantile myofibromatosis is a rare, benign soft tissue tumor characterized by the development of nodules involving the skin, striated muscle, bone, and, in exceptional cases, visceral organs. It presents with a wide spectrum of clinical manifestations depending on the extent and location of involvement.

Cutis marmorata telangiectatica congenita (CMTC) is an uncommon congenital vascular malformation, typically presenting with livedo and telangiectasias in a diffuse or segmental distribution. We report a rare case of co-occurrence of these two distinct conditions

Material and Methods

A 14-month-old girl , with no significant medical history, was initially diagnosed with congenital cutis marmorata telangiectatica congenita (CMTC).

At the age of one month, she developed a nodule on the left thigh. Physical examination revealed a reticular livedo with fine, regular meshes, partially blanching with pressure, non-infiltrated, involving both lower limbs. A firm, immobile 1.5 cm nodule with an erythematous surface was observed on the left thigh. Hemihypertrophy of the left thigh was noted, along with muscle atrophy of both legs.

Doppler ultrasound of the lower limbs showed an indurated, echogenic appearance of the soft tissues, with solid oval structures embedded within the muscles of the left leg. Muscle MRI revealed multiple subcutaneous and intramuscular nodular lesions with similar imaging characteristics.

Biopsy of one of the nodules, followed by histopathological examination, confirmed the diagnosis of infantile myofibroma.

Based on the clinical presentation, imaging findings, and biopsy results, a diagnosis of infantile myofibromatosis was established.

A staging workup was performed and showed no evidence of visceral involvement

Results

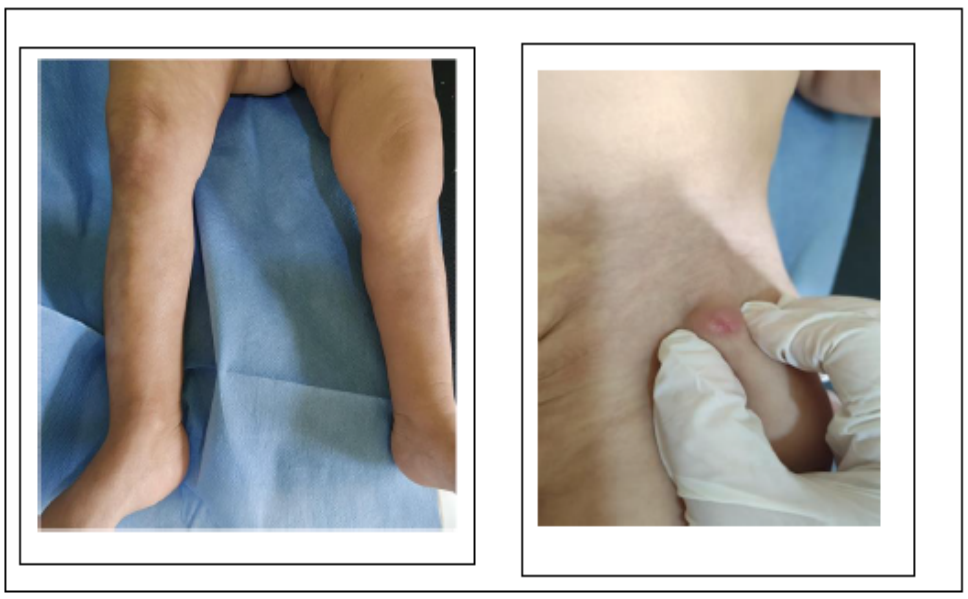

Figure1. image1

Discussion

We report a rare case of infantile myofibromatosis associated with cutis marmorata telangiectatica congenita (CMTC). This association has been described only once in the literature, in a child presenting with multiple nodules, CMTC, and hemiatrophy. In that report, the authors suggested that the coexistence of these conditions may be coincidental.

The pathophysiological link between these two entities remains unclear. Is this simply a fortuitous association, or could there be an underlying common mechanism? Further cases and studies are needed to explore this potential relationship.

Conclusion

We report the second case in the literature of an association between cutis marmorata telangiectatica congenita and infantile myofibromatosis. This rare coexistence raises the question of a potential pathophysiological link, which remains to be elucidated.

Keywords:

cutis marmorata telangiectatica congenita ;infantile myofibromatosis

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Hemosialorrhea: A New Entity?

Raouia roumili1,Rima Dali Osmane1 ,Fairouz Laradi 1;Mira Chikhaoui1,Houria Sahel1

1Bab El Oued University Hospital, bab el ouad, Algeria

Introduction

Hematidrosis is a rare eccrine sweating disorder characterized by one or more episodes of spontaneous bloody sweating on intact, non-traumatized skin.
We report a case of this rare pathology with an unusual anatomical location

Material and Methods

A 14-year-old girl with a history of peach allergy and congestive antral gastritis presented with eczema lesions on the palms, previously treated with topical corticosteroids with good improvement.
She was hospitalized for spontaneous oral cavity bleeding occurring daily for the past five years. These episodes, which last a few minutes and resolve spontaneously, occur multiple times a day without any trauma.
The bleeding episodes began following significant psychological stress related to a change of city and school environment. Clinical examination of the oral mucosa between episodes,otorhinolaryngology evaluation and nasofibroscopy, revealed no abnormalities. Hemostasis workup was normal. Upper gastrointestinal endoscopy showed non-hemorrhagic micronodular bulbitis. Based on the clinical presentation, the temporal correlation with the stress event, and unremarkable complementary investigations, a diagnosis of oral hematidrosis was made.
The patient was started on propranolol 10 mg/day following a cardiac evaluation, along with psychological support. A reduction in bleeding frequency was noted a few days after initiating treatment.

Results

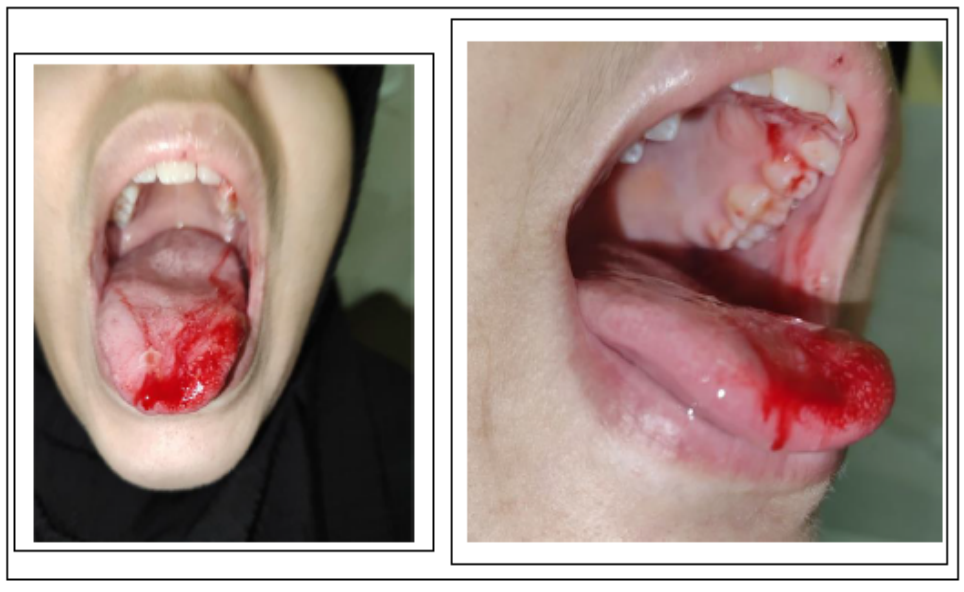

Figure1. image1

Discussion

Hematohidrosis is a rare condition characterized by episodes of bleeding through intact skin. While bleeding can affect various skin sites, mucosal involvement especially in the oral cavity is extremely uncommon.
Only a few cases of oral hematidrosis have been reported in the literature, often in association with other bleeding sites, such as a case involving a 15-year-old girl who presented with both oral hematidrosis and hemolacria.
The exact pathophysiology remains unclear. One proposed mechanism involves an initial adrenaline induced vasoconstriction of the periglandular vessels, followed by sudden vasodilation, allowing blood to extravasate into the eccrine sweat ducts. This theory is supported by reports of clinical improvement following treatment with beta-blockers. In the absence of eccrine glands within the oral mucosa, we suggest that a similar mechanism could involve the salivary glands, potentially explaining the phenomenon in our patient.
To our knowledge, this is the first reported case of isolated oral hematidrosis without any other skin or mucosal involvement.
Therefore, we propose the term hemosialorrhea to describe bleeding from the oral cavity in the context of mucosal hematidrosis.

Conclusion

Hematidrosis is an exceptionally rare condition, with only a limited number of cases reported worldwide. Although the bleeding episodes can be distressing, they are generally benign and do not compromise the the patient's overall health.
This case highlights a unique and isolated oral presentation, reinforcing the possible role of psychological stress and the effectiveness of beta-blocker therapy. Further studies are needed to better understand the underlying mechanisms and to guide optimal management strategies.

Keywords:

Hematidrosis; rare eccrine sweating disorder

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Psoriasis Superimposed on an Epidermal Hamartoma: A Rare Association

Raouia roumili1,Rima Dali Osmane1 , Mira Chikhaoui1, Houria Sahel1

1Bab El Oued University Hospital, bab el ouad, Algeria

Introduction

Epidermal nevi are cutaneous hamartomas with an often linear and unilateral distribution following Blaschko's lines. Present from birth or appearing early in childhood, they are characterized by epidermal hyperplasia with multiple clinical and histological forms.

This case illustrates the potential complexity of diagnosis in the presence of a linear psoriasiform eruption arising on an epidermal hamartoma, and it establishes a distinct clinical entity: psoriasis superimposed on an epidermal nevus.

Material and Methods

An 8-year-old child had a verrucous nevus on the right side of the body since the age of 3 months. Erythematous-squamous lesions appeared on this hamartoma six years later. Physical examination revealed an epidermal hamartoma on the right side of the body, sparing the face, producing pigmented plaques with a rough surface and a dirty keratotic appearance, arranged in bands following Blaschko's lines. Well-defined, rounded erythematous-squamous lesions were observed on the hamartoma, located on the neck, shoulder, axillary hollows, and umbilicus. Examination of the skin folds revealed intertrigo between the glutes. Parasitological and mycological examinations were negative. Skin biopsy of an erythematous squamous lesion suggested psoriasis.

The diagnosis of psoriasis superimposed on a pre existing epidermal nevus was confirmed.

The patient was treated with topical corticosteroids, resulting in clear improvement of her psoriasis.

Results

Figure1. image1

Discussion

We report the case of a patient with a verrucous epidermal hamartoma with Blaschko-linear arrangement, on which psoriasis lesions developed. This association is rare. The few cases reported in the literature presented typical psoriasis lesions, but these were not exclusively located on the hamartoma. Our case presented a single psoriasis lesion outside the hamartoma, located at the level of the intergluteal fold. The main challenge was distinguishing between the two entities: psoriasis developing on a pre-existing hamartoma or a hamartoma mimicking psoriasis.

The diagnosis of psoriasis was made based on the chronology of lesion appearance, the clinical picture, and histology, with the elimination of differential diagnoses such as leishmaniasis and mycotic infections.

The pathophysiological explanation for this association remains poorly understood. Several factors are implicated, mainly genetic factors, epigenetics, and the Koebner phenomenon.

Conclusion

Epidermal hamartomas can be the site of a heterogeneous group o inflammatory dermatoses with a Blaschko-linear disposition, such as psoriasis.

Keywords:

Epidermal nevi ; cutaneous hamartomas

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The Drug Profile of Severe Cutaneous Adverse Drug Reactions in the Dermatology Department, CHU Bab El Oued, Algiers

R. Dali osmane , H. SAHEL
Dermatoloy service / University hospital center of Bab el oued / Algeria

Introduction

Cutaneous adverse drug reactions (CADRs) encompass a wide spectrum of clinical presentations; some are severe, life-threatening, and constitute true dermatologic emergencies. These include acute generalized exanthematous pustulosis (AGEP), drug reaction with eosinophilia and systemic symptoms (DRESS), and toxic epidermal necrolysis (TEN), which includes Stevens-Johnson syndrome (SJS) and Lyell's syndrome.
The aim of our study was to evaluate the drug profile of patients who developed severe CADRs.

Materials and methods

We conducted a descriptive, retrospective, monocentric study at the Dermatology Department of CHU Bab El Oued over a period of six years, from January 2019 to January 2025, including all cases of severe CADRs.

Results

We collected 51 patients with severe CADRs: 22 patients (43%) presented with AGEP, 18 patients (35%) with DRESS,11 patients (21.5%) with SJS, TEN, or overlap syndrome.The mean age was 45.29 years (range: 7–86 years), with a female predominance (F/M ratio: 1.48).
In AGEP, the most frequently implicated drug was amoxicillin (31.8%), followed by hydroxychloroquine (27.3%), terbinafine (13.6%), and various other drugs in 27.3%.In DRESS, the most frequently implicated drugs were antibiotics (38.88%) (amoxicillin ± clavulanic acid, cefotaxime, ciprofloxacin, vancomycin, cotrimoxazole, and azithromycin), followed by aromatic antiepileptics (33.3%) (carbamazepine, phenobarbital, lamotrigine, sodium valproate), allopurinol in 3 cases (16.7%), then salazopyrine and acetazolamide.In SJS/TEN or overlap syndrome, the most implicated drugs were allopurinol, hydroxychloroquine, and lamotrigine (18% each), followed by antibiotics (sulfonamides, secnidazole, cephalexin, cefotaxime, amoxicillin) in 9.1% each.
In AGEP, clinico-biological resolution occurred within an average of 15 days (range: 4–30), with no deaths. In DRESS, resolution was achieved within an average of 11.06 days (range: 3–20), with no deaths. In TEN, mortality was estimated at 18.2%.

Discussion

Cutaneous reactions are the most frequent adverse drug reactions reported to pharmacovigilance centers. Severe CADRs mainly include TEN (classified by detachment surface: SJS <10%, overlap 10–29%, TEN ≥30%), DRESS, and AGEP. TEN is usually the most frequent in the literature, but in our study, AGEP was predominant. AGEP is most often induced by antibiotics, mainly aminopenicillins (7 cases of amoxicillin and 2 of cephalosporins in our cohort), quinolones, sulfonamides (1 case), and pristinamycin. Other less common causes included diltiazem (1 case), chloroquine/hydroxychloroquine (6 cases), and terbinafine (3 cases). For DRESS, our results differed from the literature: antibiotics were the most common triggers (38.88%), likely due to high prescription rates, followed by antiepileptics, allopurinol, salazopyrine, and acetazolamide.In TEN, the most implicated drugs were consistent with the literature: allopurinol, hydroxychloroquine, lamotrigine (2 cases each), antibacterial sulfonamides (1 case), NSAIDs (oxicam type), antiepileptics (2 cases), and antiretrovirals such as nevirapine.
A recent study (Wong et al.) also identified beta-lactams as the most common antibiotics involved (3 cases in our series), whereas secnidazole was rarely implicated.

Toxic epidermal necrolysis

Acute generalized exanthematous pustulosis

Conclusion

Antiepileptics and antibiotics remain the most implicated drugs in severe CADRs.
The hierarchy of causative drugs varies depending on the type of reaction. This may be explained by genetic predisposition, exogenous factors, as well as the pharmacodynamics of the drugs.

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Pleomorphic Adenoma of the Palate: A Case Report and Literature Review

Dr. Bouriah .N. Dr. Boulmerka .S. Pr. Boukais .H.

Department of Oral Pathology and Surgery, University Hospital of Blida, Faculty of Medicine, University of Blida, Algeria

Abstract:

Pleomorphic adenoma (PA) is the most common benign tumor of the salivary glands, accounting for 40% to 70% of all salivary gland tumors. When it arises in the minor salivary glands, the palate is the most frequent site, followed by the buccal mucosa and the lips. Clinically, it presents as a painless, slow-growing mass, which often constitutes the reason for consultation. Although this type of tumor has a favorable prognosis, it requires appropriate and prompt management to prevent recurrence and, more importantly, malignant transformation, which remains relatively rare but not n egligible.

Through our poster presentation, we report a clinical case of a 58-year-old patient referred to our department for a well-defined, firm, slow-growing palatal mass, which, after surgical excision and histopathological examination, was diagnosed as a pleomorphic adenoma.

Keywords: Pleomorphic adenoma; Minor salivary glands; Palatal tumor; Benign salivary neoplasm.

Introduction

Pleomorphic adenoma (PA) is the most common benign salivary gland tumor, arising in both major and minor glands. About 30 % of PAs originate in minor salivary glands, with the palate being the most frequent intraoral site. Clinically, PA presents as a slow-growing, painless, solitary nodule, partially or fully encapsulated, occasionally causing compressive bone resorption. Histologically, it exhibits a biphasic architecture of epithelial and myoepithelial cells within a variable mesenchymal-like stroma (myxoid, chondroid, or hyaline), reflecting its "pleomorphic" nature. This dual cellular composition and stromal heterogeneity are recognized in the WHO classification of salivary gland tumors and guide diagnosis and surgical planning. Complete excision ensures excellent prognosis and minimal recurrence.

Case report :

A 58-year-old male presented with a palatal swelling that had been progressively enlarging over the past 4 years. The lesion caused functional impairment, particularly affecting the fit and stability of his upper complete denture, which he has been wearing for 6 years. He reported no significant medical, surgical, or dental history,

Clinical Presentation

Intraoral examination revealed a well-circumscribed, round unilateral swelling in the posterolateral left hard palate, measuring approximately 2 cm in mesiodistal diameter and displacing the palatal fibromucosa. The lesion had a color similar to the surrounding mucosa. On palpation, it was firm, compressible, non-reducible, non-fluctuant, and painless, with a non-indurated base, and exhibited a slightly convex, dome-like ("watch-glass") appearance.

Figure 1: Preoperative view of a palatal PA a in a 58-year-old patient (B.N.)

Diagnostic Investigations

A 3D Dentascan demonstrated a well-circumscribed, solid palatal mass in the posterolateral aspect of the left hard palate, measuring approximately 22 × 20 × 12 mm .

The lesion was closely approximating the floor of the maxillary sinus, without evidence of cortical bone breach, osseous resorption, or calcific deposits, consistent with confinement to the palatal soft tissues.

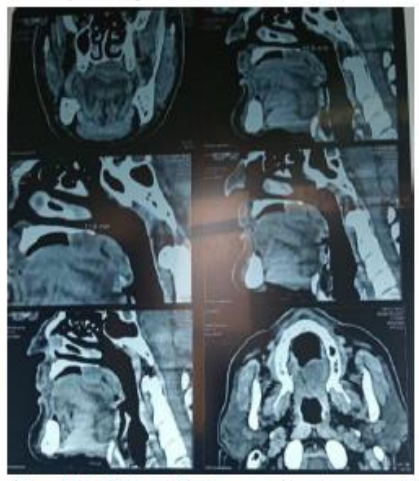

Figure2:Multiplanar Dentascan sections demonstrating the left posterolateral PA in the present case.

Surgical Management

Surgical excision of all lesions was performed under local anesthesia using an intraoral approach (Fig. 3). The palatal tumor was managed by complete excisional biopsy, including the overlying mucosa, with a safety margin. The different surgical steps are illustrated in Fig. 3

The surgical specimen was fixed in formalin and submitted for histopathological examination.

Figure 3. Surgical steps of palatal PA excision Dr Bouriah ;Dr Boulmerka ;Pr Boukais

Figure 4. Resected specimen of palatal AP

Figure 5:. Clinical follow-up at 8 months postoperatively showing satisfactory healing.

Histopathology

Macroscopic examination showed a well-circumscribed, elastic, whitish nodule measuring 2.5 × 2 × 1.5 cm. The initial histopathology suggested polymorphous adenocarcinoma, leading to a second review with immunohistochemistry. The final diagnosis confirmed a well-encapsulated tumor composed of trabeculae and cords of epithelial and myoepithelial cells within a fibromyxoid stroma, with clear margins, consistent with pleomorphic adenoma.

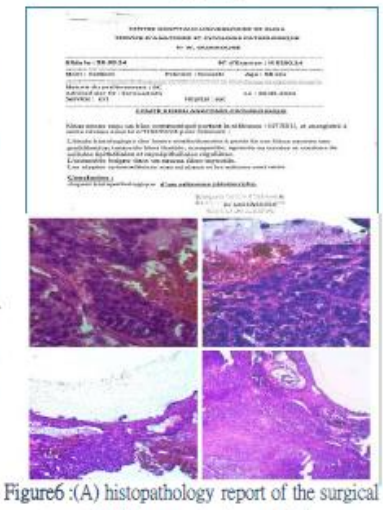

Figure6 :(A) histopathology report of the surgical specimen; (B) Microscopic views of PA

Discussion

-PApredominantly occurs in the posterolateral region of the hard palate, partially or fully encapsulated, often causing compressive bone resorption; in our case, the lesion was unilateral and posteriorly located. Clinically, PAs are slow-growing, solitary, and asymptomatic nodules (SFORL, 2020[1]).

-Recurrence is uncommon but linked to incomplete excision and thin or discontinuous capsule; careful surgical planning with monobloc resection is essential to minimize recurrence. In our case, the tumor was completely excised with clear margins .

-Malignant transformation into carcinoma ex pleomorphic adenoma (CXPA) is rare (<7% of minor salivary gland PAs), usually increasing with recurrence and diagnostic delay (1.6% before 5 years, 9.4% after 15 years); vigilance is warranted even for clinically benign lesions.

-Imaging, especially 3D Dentascan or CT with contrast, is crucial for assessing lesion size, extension, and relationship with the maxillary sinus, guiding surgical planning .

Conclusion

Pleomorphic adenoma of minor salivary glands is a slow-growing benign tumor. Definitive management requires complete surgical excision with an adequate safety margin, and long-term follow-up is essential to monitor for potential recurrence or malignant transformation..

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Primary Mandibular Plasmacytoma in a 37-Year-Old Patient Mimicking a Benign Lesion

Dr.Bala H., Pr.Boukais H., Dr. BoulmerkaS.
Department of Pathology and Oral Surgery,Blida

Abstract

Solitary plasmacytoma of the mandible is exceptionally rare and may mimic benign odontogenic lesions. We report the case of a 37-year-old patient presenting with a well-defined radiolucent mandibular lesion initially suspected to be a benign cyst. Surgical enucleation was performed under local anesthesia. Histopathology and immunohistochemistry confirmed a solitary plasmacytoma (CD138+ / CD20–). Systemic evaluation excluded multiple myeloma. Despite treating the lesion as benign, the patient remained recurrence-free after two years of clinical, radiological, and biological follow-up. This case highlights the diagnostic difficulties and the importance of histopathological confirmation.

Keywords:

Plasmacytoma – Mandible – Bone lesion – Diagnostic challenge – Oral surgery

Introduction

- Solitary plasmacytoma of bone is a **rare malignant plasma cell neoplasm**.
- Mandibular involvement is uncommon and **often mimics benign odontogenic lesions**.
- Occurrence in young adults is exceptional, leading to diagnostic difficulty.
- Histopathology and immunohistochemistry remain essential for definitive diagnosis.

Material and Methods

Clinical Evaluation

- 37-year-old male, no systemic medical history.
- Slow-growing left mandibular swelling for >1 year.
- Recent onset of left labiomental paresthesia (1 month).
- Intraoral exam: well-limited vestibular bony expansion, non-inflammatory, painless.

Radiological Assessment

- **Panoramic radiograph**: well-defined unilocular radiolucency near sockets of 35–36.
- **CBCT**:
  - Homogeneous, well-defined radiolucent lesion (20 × 11 × 23.6 mm).
  - Buccal cortical thinning with focal perforation.
  - Slight displacement of the inferior alveolar nerve canal.
  - No dental involvement.

Surgical Method

- Conservative **enucleation and curettage** under local anesthesia, as for a benign lesion.

Histopathology & IHC

- Dense sheets of atypical plasma cells dissociating bone trabeculae.
- Eccentric nuclei, eosinophilic cytoplasm.
- **CD138: diffuse strong positivity**.
- **CD20: negative**.
- Morphological and phenotypical profile: **solitary plasmacytoma**.

Results

Final Diagnosis :

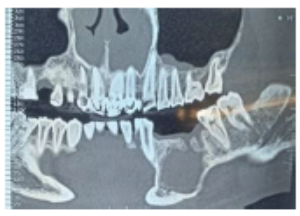
- **Solitary plasmacytoma of the mandible.**

Systemic Assessment

- Hematology workup, imaging, and PET-CT: **no systemic disease**, excluding multiple myeloma.

Outcome / Follow-Up :

- No treatment required (no systemic involvement).
- **No recurrence at 24-month follow-up:**
  - Clinical /Radiological (PET-CT)/Biological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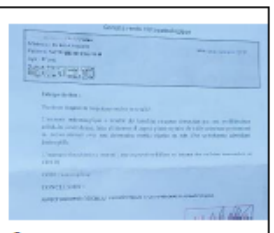
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Figure 1. Well-defined unilocular radiolucency in left mandible (CBCT).
Figure 2. Intraoperative view showing enucleation of the lesion.
Figure 3. Dense proliferation of plasma cells with eccentric nuclei (H&E).

Discussion

- All clinical and radiographic signs suggested a **benign lesion** (residual cyst or odontogenic tumor).
- Final diagnosis revealed a **malignant plasma cell neoplasm**, emphasizing the diagnostic challenge.
- Conservative surgery (performed as for a benign cyst) achieved complete local control.
- Early suspicion, biopsy, and histological confirmation are crucial to avoid misdiagnosis.

Conclusion

- Solitary plasmacytoma can **exceptionally present with features of a benign mandibular lesion**, especially in younger patients.
- **Histopathology and immunohistochemistry are indispensable** for accurate diagnosis.
- **Conservative enucleation** may provide excellent local control when systemic disease is absent.
- Long-term surveillance is essential due to the potential progression toward multiple myeloma.

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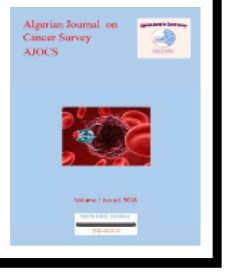

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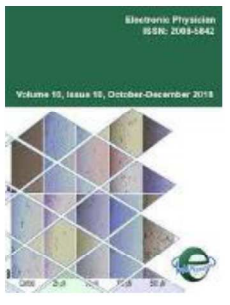

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