



Echahid Hamma Lakhdar University -El-Oued
Faculty of Natural and Life Sciences
Department of Cellular and Molecular Biology-
Laboratory of L.B.E.H.
in coordination with the Ibn Sina Scientific Club



PROGRAMME

1st Study Day on

A Renewed Hope for AIDS: Latest Innovations in Prevention, Awareness, and Support.

يوم دراسي حول

السيدا: الأمل يتجدد - أحدث الابتكارات في الوقاية والتوعية والدعم



El Oued on December 1st, 2024

قاعة المحاضرات بكلية علوم الطبيعة والحياة

8.30-9.00	The opening Word from the Chairperson of the Study Day Word from the Dean
9.00-9.30	Conference by Dr HOUMRI Nawal « Epidemiological Study of HIV/AIDS in Algeria»
9.30-10.00	Conference by Dr CHORFI Lobna « VIH/SIDA : Comprendre, Prévenir et agir pour un meilleur future »

10.00-10.30	Coffee break + poster session
10.30-11.00	Conférence du Dr FERROUDJ Rawya « Infection àVIH »
11.00-11.30	Conférence du Dr GHEDHAIFI Hynd «التكفل النفسي بضحايا مرض السيدا»
11.30-12.00	Debates

Conférence

Epidemiological Study of HIV/AIDS in Algeria

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Abstract

HIV/AIDS remains a major public health concern in Algeria, requiring an in-depth analysis of epidemiological dynamics, risk factors, and current challenges.

This study, based on data from ministerial reports, highlights a moderate increase in new cases, particularly among young adults and women. This progression is explained by a lack of access to early testing, low awareness, and limited resources in rural areas. The highest prevalence is observed in certain *wilayas* due to population mobility and the absence of targeted interventions. Moreover, despite national efforts, antiretroviral (ARV) coverage remains insufficient to meet growing needs.

These findings underscore the urgent need to strengthen public health programs, increase testing and awareness campaigns, and intensify collaboration between national and international institutions. A targeted intervention strategy and concerted actions will help move toward the ambitious goal of eradicating the HIV/AIDS epidemic in Algeria.

Keywords: HIV, AIDS, Public Health, Early Screening.

INFECTION à VIH

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Abstract

- L'infection par le VIH ou virus de l'immunodéficience humaine est une infection virale chronique due à un virus à ARN.
- Découverte pour le premier fois dans les années 80.
- Elle reste un problème de santé public à l'échelle mondiale ; et L'une des causes principales du décès.
- Actuellement elle affecte plus de 39 millions personnes dans le monde dont 60% des personnes infectées sont en Afrique subsaharienne.
- Les modes de transmission du VIH sont identifiés : sexuelles, sanguine et materno-foetale.
- Les aspects cliniques évoluent en trois phases : primo-infection, infection chronique et le stade SIDA.
- Maladie mortelle qui s'est transformé en maladie chronique grâce aux antirétroviraux, qui permettent de contrôler la réplication virale, ces PVVIH peuvent vivre plus longtemps et en bonne santé.
- La prévention reste le seul moyen pour lutter contre cette infection ainsi que L'intérêt major de dépistage précoce.
- Malgré les progrès dans la prise en charge des PVVIH l'infection à VIH demeure un fléau.

Virus de l'immunodéficience humaine/AIDS

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Abstract

Le VIH (Virus de l'Immunodéficience Humaine) est une maladie sexuellement transmissible, bien que sa transmission entre individus ne soit pas facile. Toutefois, sa propagation a considérablement augmenté ces dernières années.

Lors de notre conférence, nous avons défini ce virus et expliqué son mode d'action. Le VIH cible les cellules immunitaires, les transformant en "usines" qui produisent davantage de virus. Ce processus détruit la capacité de ces cellules à défendre l'organisme.

La gravité de cette maladie basée sur la destruction progressive du système immunitaire, ouvrant la voie à de nombreuses maladies opportunistes graves. Nous avons également évoqué les défis liés à son traitement, notamment la résistance aux médicaments, soulignant ainsi l'importance d'un contrôle rigoureux de la maladie.

Enfin, nous avons insisté sur l'importance d'un dépistage précoce (par technique Elisa ; western Blot) et avons partagé quelques conseils pratiques pour les patients. Nous avons également mis en avant le rôle crucial de la santé mentale dans le cadre du traitement.

Mots clé : VIH, maladie contagieuse, sexuellement transmissible, Immunodéficience, dépistage (technique Elisa, western Blot).

Session poster

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03	MEHELLOU Zineb , BEDOUI Samah, SEGUENI Hana, BOURAS Biya, TLILI Mohammed Laid	Avoiding hepatitis B' risk factors for HIV/AIDS patients in the region of El Oued	
04	BENINE Chaima , LAICHE Ammar Touhami	Exploring the Anti-HIV-1 Reverse Transcriptase Potential of Medicinal Plants and Zinc Oxide Nanoparticles	
05	BOUKHTACHE Naoual , MOUANE Aicha,	Challenges of HIV/AIDS in Southern Algeria and the Use of Medicinal Plants as Complementary Treatment	
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09	BOUSBIA BRAHIM Aida , CHOUIKH Atef et CHEFROUR Azeddine	Evaluating the Role of Nutritional Supplements in Enhancing Immunity Among People Living with HIV: A Literature Review	
10	AZZI Manel , MEDILA Ifriqya, BERKANE Lamia	Nanotechnology and the Treatment of HIV Infection	

Nanotechnology and the Treatment of HIV Infection

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Abstract

Nanotechnology has emerged as a transformative field with immense potential in the treatment and management of HIV infection. The application of nanomaterials offers innovative approaches to overcome challenges associated with traditional antiretroviral therapies (ART), including drug resistance, limited bioavailability, and off-target toxicity. Nanoparticles, such as liposomes, dendrimers, and polymeric nanocarriers, have been engineered to enhance the delivery of antiretroviral drugs by improving their stability, targeted delivery, and controlled release. Additionally, metallic nanoparticles like gold, silver, and zinc oxide demonstrate intrinsic antiviral properties, disrupting viral replication and entry pathways. These advancements pave the way for the development of multifunctional nanosystems capable of integrating drug delivery with diagnostics (theranostics) for real-time monitoring of therapeutic efficacy. Emerging research highlights the potential of nanotechnology to address latent HIV reservoirs, a significant barrier to achieving a complete cure. Targeted nanosystems have shown promise in delivering latency-reversing agents directly to infected cells, enabling reactivation and clearance by the immune system. Moreover, nanoparticle-based vaccines are being explored to elicit robust and long-lasting immune responses against HIV. Despite these advancements, challenges remain regarding the scalability, biocompatibility, and regulatory approval of nanotechnology-based therapies.

This review explores the multifaceted roles of nanotechnology in enhancing HIV treatment strategies, with a focus on improving drug efficacy, combating drug resistance, and advancing curative approaches. By bridging nanomedicine and virology, this innovative paradigm holds the potential to revolutionize the management of HIV, offering hope for improved patient outcomes and progress toward a functional cure.

Keywords: Nanotechnology, HIV treatment, antiretroviral therapy, drug delivery, metallic nanoparticles, latency reversal, nanomedicine, nanovaccine.

Using medicinal plants to treat cancer

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Abstract

Cancer is a major public health problem in Algeria, with an annual increase in the number of cases. Although conventional treatments such as surgery, chemotherapy and radiotherapy are effective, they often cause significant side effects. As a result, many people are opting for medicinal plants as a complementary or alternative treatment. The aim of this study is to assess the diversity of medicinal plants used to treat different types of cancer in the wilaya of El-Oued, Algeria. A survey was carried out between April and May 2024 among 100 cancer patients at the Bachir Rezgui Cancer Center in El-Oued, and 60 phytotherapists in various communes of the wilaya. The survey focused on the identification of medicinal plants used in cancer treatment. Two separate questionnaires were used: one for patients to identify the plants they use, and the other for phytotherapists to determine which plants they recommend. Each questionnaire comprised three sections: general information, information on the disease, and information on the plants used.

The survey of cancer patients showed that 60% were women, mainly aged between 40 and 59, and mostly uneducated with an average socio-economic level. Breast cancer was the most common, diagnosed at stage II in most cases, between 1 and 3 years old. The study identified 21 medicinal plants used by patients, including *Ephedra alata*, *Nigella sativa*, *Curcuma longa* and *Artemisia*. Among phytotherapists, 81% believe that phytotherapy can treat cancer, while 18% think it reduces the side effects of conventional treatments. They recommend 11 plants, including *Ephedra alata*, *Artemisia*, *Nigella sativa*, *Salvia officinalis*, and *Moringa oleifera*.

Through our study of patients and phytotherapists in El-Oued. 73% of patients use phytotherapy to treat cancer, and 27% to alleviate the side effects of conventional treatments. The study identifies 23 plant species, including *Ephedra alata*, *Artemisia* and *Nigella Sativa*, for which pharmacological research is underway to confirm their anticancer efficacy.

Keywords: Cancer, El-oued, survey, *Ephedra alata*, phytotherapy.

Avoiding hepatitis B' risk factors for HIV/AIDS patients in the region of El Oued

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Abstract

Co-infection with human immunodeficiency virus (HIV) and viral hepatitis B (HBV) is a major health problem for HIV positive patients. This work aims to define the risk factors to avoid for viral hepatitis B for HIV positive patients as well as for individuals in the population of El Oued. This study is carried out at the infectious diseases department of the Ben Amor El-Djilani public hospital in El Oued. The collection of information on patients with viral hepatitis B was done prospectively from January 2017 to December 2019. The results of the study show that the population studied covers a total of 657 cases of viral hepatitis B. Patients aged between 15 and 43 years are the most affected by HBV. The discovery of the viral infection was during a premarital assessment in 30.1% of HBV cases. Regarding the identification of risk factors, the results showed that the possible routes of contamination are dental care (41.9%), intrafamily carriage (31.3%), surgical history (16.3%) and El Hydjama (8.7%). The management of viral hepatitis B for HIV/AIDS patients is very costly for health. To reduce its prevalence, preventive measures for improving hygiene conditions must be followed, such as the use of clean equipment in case of injection or sniffing and refraining from sharing toilet equipment such as toothbrushes, razors and nail clippers.

Keywords: Human immunodeficiency virus, Hepatitis B virus, Risk factors, El Oued region.

Exploring the Anti-HIV-1 Reverse Transcriptase Potential of Medicinal Plants and Zinc Oxide Nanoparticles

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Abstract

Human Immunodeficiency Virus (HIV) infection and Acquired Immune Deficiency Syndrome (AIDS) remain significant global health challenges. Traditional medicinal plants have been used to manage these though their biological activities are not fully understood. This study investigated the anti-HIV-1 Reverse Transcriptase (RT) activities of selected medicinal plants, including *Harungana madagascariensis*, *Sapium ellipticum*, *Pseudospondias microcarpa*, *Capparis erythrocarpos*, and *Plectranthus barbatus*, as well as zinc oxide nanoparticles (ZnO-NPs) synthesized from aqueous extracts of *H. madagascariensis*. Notably, ethyl acetate extracts of *P. barbatus*, *S. ellipticum*, *C. erythrocarpos*, and aqueous extracts of *H. madagascariensis* demonstrated over 50% HIV-1 RT inhibition at 10 mg/mL. The aqueous extract of *H. madagascariensis* showed the highest anti-HIV-1 RT activity ($IC_{50} = 0.9$ mg/mL). Additionally, ZnO-NPs synthesized from *H. madagascariensis* aqueous extract exhibited comparable anti-HIV-1 RT activity to the aqueous extract of *H. madagascariensis*. These findings provide valuable insights for drug discovery from medicinal plants.

Keywords: HIV/AIDS, Nanoparticles, Plant extracts, HIV-1 reverse transcriptase inhibition

Challenges of HIV/AIDS in Southern Algeria and the Use of Medicinal Plants as Complementary Treatment

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Abstract

In southern Algeria, HIV/AIDS poses an increasing public health challenge. Reports from the Ministry of Health in 2023 indicate that the southern regions account for approximately 18-20% of the total registered cases in the country, with more than 3,000 confirmed cases. Provinces such as Ouargla, Tamanrasset, and Ghardaia show a significant rise in infections, with some areas recording an annual increase of up to 7%, particularly among young individuals (15–35 years) and women.

HIV/AIDS treatment relies on antiretroviral drugs (ARVs), which help control the progression of the virus and improve patients' quality of life. However, studies highlight the potential role of certain medicinal plants in boosting immunity and alleviating symptoms. Among these plants, garlic (*Allium sativum*) is used to enhance immunity, aloe vera (*Aloe vera*) to reduce inflammation, and green tea (*Camellia sinensis*) as an antioxidant. Additionally, black seed (*Nigella sativa*) exhibits anti-inflammatory properties, while ginseng (*Panax ginseng*) supports energy and immune function.

Despite their potential benefits, these plants are not substitutes for medical treatment but serve as complementary approaches to improve overall health. Further scientific studies are needed to confirm their efficacy and safety, with medical supervision essential to ensure proper use and avoid adverse interactions.

Keywords: HIV/AIDS, Southern Algeria, Medicinal plants, Antiretroviral drugs (ARVs), Immunity enhancement.

Acrylamide et acides gras trans: source alimentaire et risque sur les patients HIV

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Résumé

En 2002, l'acrylamide a été détectée dans des aliments chauffés où sa formation dépendait de la température. À l'aide de la chromatographie liquide couplée à la spectrométrie de masse, des niveaux modérés d'acrylamide (5-50 µg/kg) ont été détectés dans les aliments riches en protéines chauffés, mais des teneurs plus élevées en acrylamide (150-4 000 µg/kg) ont été détectées dans les aliments riches en glucides. Cette molécule pourrait se former pendant la cuisson à haute température (supérieur à 120°C) par plusieurs mécanismes. Dans notre alimentation, la néoformation de l'acrylamide apparaît principalement en chips, biscuits, café torréfié avec le sucre. La consommation journalière des aliments riches en acrylamide est corrélée principalement avec la santé du foie. Comme conséquence, il entraîne une diminution des enzymes hépatiques (l'aspartate aminotransférase, l'alanine aminotransférase et la phosphatase alcaline), des activités de la superoxyde dismutase et de la catalase, tandis que l'état oxydant total et les niveaux de malondialdéhyde ont augmenté. Les acides gras en conformation trans peuvent être produits lors de certains traitements des huiles végétales ; principalement l'hydrogénation partielle des huiles au niveau de l'industrie agroalimentaire. Ce changement de conformation naturelle de double liaison de cis à trans agit négativement sur la valeur alimentaire de la matière grasse. Au niveau alimentaire, ces acides gras trans néoformés sont disponibles en grande quantité dans les préparations fromagères, les faux chocolats, les biscuits et les crèmes pâtisseries. La consommation accrue de ces molécules est corrélée avec l'accroissement des facteurs de risque cardiovasculaire. Pour des niveaux de consommation élevés, les acides gras trans augmentent les LDL-cholestérol et baissent les HDL-cholestérol. En conclusion, les patients HIV ne doivent pas intégrer les aliments riches en acrylamide et en acides gras trans dans le régime alimentaire quotidien. Une alternative alimentaire saine consiste à adopter un régime riche en protéines et en graisses principalement d'origine animale et à éviter la restauration rapide et la restauration de rue.

Mots clés : Acrylamide, acides gras trans, patients HIV.

Plantes médicinales utilisées dans le traitement de la candidose œsophagien

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Résumé

Le candida digestif, également connu sous le nom de candidose digestive, est le développement de champignons *Candida albicans* dans le tube digestif. Ces champignons ont la capacité de coloniser tout le système digestif, y compris la bouche, la langue, l'œsophage, l'estomac, les intestins, l'anus, des organes muqueux. Le *Candida albicans* est un champignon naturel de la famille des levures qui se trouve dans l'intestin et fait partie des micro-organismes qui constituent la flore intestinale. En bonne quantité, il prévient les infections et contribue à la purification de l'intestin. Quand le microbiote intestinal est perturbé, la présence excessive de *Candida albicans* dans le tube digestif peut entraîner la libération de toxines. Des douleurs particulièrement intenses sont causées par les lésions causées par cette mycose digestive qui empêchent le patient ou la patiente de s'alimenter ou de déglutir. Les symptômes de cette infection fongique non contagieuse sont des flatulences et des problèmes de digestion. Des traitements naturels contre la candidose existent, qu'ils soient à base de plantes ou d'huiles essentielles. Ces remèdes naturels comprennent de l'ail, de l'huile essentielle d'origan, de thym, de clou de girofle, d'arbre à thé, le gel d'aloë vera, l'huile de nigelle et l'extrait de pépins de pamplemousse.

The Role of Balanced Nutrition in Enhancing Immunity Among People Living with HIV: The Link Between Malnutrition and Disease Progression

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Abstract:

Nutrition is a cornerstone of health, particularly for individuals living with HIV (PLWH), as it directly impacts immune function and disease progression. HIV disrupts the body's ability to absorb essential nutrients, primarily due to damage to the gastrointestinal system. This, combined with increased energy requirements to combat the virus and systemic inflammation, often leads to malnutrition. Malnutrition weakens the immune system, making individuals more susceptible to opportunistic infections and accelerating the progression of the disease. Tailored nutritional interventions, including dietary plans enriched with essential vitamins, minerals, and proteins, have proven to improve immune function, enhance the effectiveness of antiretroviral therapy (ART), and reduce the incidence of secondary infections. By integrating nutritional support into HIV care, healthcare providers can address both the physical and psychological aspects of the disease, improving overall patient outcomes. This study underscores the need for multidisciplinary approaches that prioritize nutrition as a fundamental component of HIV management strategies.

Keywords: Nutrition; HIV/AIDS; Immune Function; Malnutrition; Antiretroviral Therapy (ART)

Evaluating the Role of Nutritional Supplements in Enhancing Immunity Among People Living with HIV: A Literature Review

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Abstract:

Immunodeficiency remains one of the most significant challenges faced by individuals living with HIV, increasing their susceptibility to opportunistic infections and complications. In this context, numerous studies have highlighted the potential role of nutritional supplements in strengthening immune function and improving overall health in HIV-positive individuals. This review aims to analyze the scientific literature regarding the effects of micronutrients such as vitamins (D, C, and E) and minerals (zinc, selenium, and magnesium) on immune response enhancement. The review explores evidence on the role of vitamin D in regulating immune function, vitamin C in reducing oxidative stress, and the contributions of zinc and selenium in supporting immune system functionality and mitigating chronic inflammation. It also examines clinical trials that suggest nutritional supplements may augment the efficacy of antiretroviral therapy (ART) and reduce its associated side effects.

Additionally, the review addresses challenges related to the use of supplements, including optimal dosages, potential interactions with other treatments, and variations in individual responses. The study concludes with recommendations to advance research in this field and develop targeted nutritional strategies to improve the quality of life for people living with HIV.

Keywords: HIV/AIDS ; Nutritional supplements ; Immune enhancement ; Micronutrients ; Antiretroviral therapy (ART).

Nanotechnology and the Treatment of HIV Infection

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Abstract

Lifelong treatment of HIV infection is difficult due to viral reservoirs, toxicity, medication resistance, and suboptimal adherence. By developing medications with pharmacological advantages resulting from special processes that happen at the "nano" size, the developing field of nanotechnology may be able to help address these issues. The physicochemical characteristics of particles at these sizes differ from those of bulk materials, individual molecules, or atoms. Examples of how nanopharmaceuticals, including nanocrystals, nanocapsules, nanoparticles, solid lipid nanoparticles, nanocarriers, micelles, liposomes, and dendrimers, have been studied as possible anti-HIV treatments are given in this study, along with definitions of key terms and concepts in nanotechnology. Such drugs may, for example, be used to optimize the pharmacological characteristics of known antiretrovirals, deliver anti-HIV nucleic acids into infected cells or achieve targeted delivery of antivirals to the immune system, brain or latent reservoirs. Also, nanopharmaceuticals themselves may possess anti-HIV activity. However, several hurdles remain, including toxicity, unwanted biological interactions and the difficulty and cost of large-scale synthesis of nanopharmaceuticals

Key words:

HIV infection, nanotechnology, pharmacological, antivirals.