International Conference on Biomedical and Pharmaceutical Sciences (ICBPS-2022)

August 27-28, 2022

BOOK OF ABSTRACTS

Published by

International Journal of Natural Medicine and Health Sciences

ICBPS CHAIR WELCOME ADDRESS

Dear colleagues,

International Conference on Biomedical and Pharmaceutical Sciences 2022 (ICBPS-2022) was successfully held on August 27-28, 2022 by World Forum by Young Scientists (WFYS) in online platform. Many international invited speakers presented a high quality of topics relevant to biomedical sciences to young researchers.
It has provided a multidisciplinary point of views for the young to plan their future research and also led a way for them to establish new collaborations.
I am happy to be part of ICBPS-2022 as one of the organizers and invited speaker. I really hope that next version of ICBPS would be organized and looking forward to it. I would like to thank all participants, speakers, and organizing team for 2022 series of this wonderful conference event.

Kind regards,
Prof. Dr. Ilkay ERDOGAN ORHAN
Faculty of Pharmacy, Gazi University
Ankara, Turkiye

International Conference on Biomedical and Pharmaceutical Sciences (ICBPS-2022)-Conference Schedule

August 27, 2022

Session (Biomedical Sciences) Chair: Dr. Urooj Javed and Co-Chair Syeda Anza Husnain

Time (GMT+5)	Speaker	Affiliation
7:00 PM- 7:30 PM	Dr. Tariq Zaman	Research Professor, College of Human Medicine, Michigan State University, USA zamantar@msu.edu
7:50 PM- 8:05 - PM	Dr. Liu Bin	Associate Professor School of Biomedical Engineering and Informatics, Nanjing Medical University, China liubin@njmu.edu.cn
8:05 PM-8:20 PM	Dr. Ilia Stambler	Chairman "Vetek" (Seniority) Association – the Movement for Longevity and Quality of Life, Israel ilia.stambler@gmail.com
8:30 PM – 8:45 PM	Dr. Muhammad Naveed	Associate Professor, Department of Biotechnology, University of Central Punjab, Pakistan dr.naveed@ucp.edu.pk
9:40 PM- 10:00 PM	Oral/Poster Presentations **(Three Minutes Elevator Pitch Competition)**	

August 28, 2022

Session (Pharmaceutical Sciences) Chair: Dr. İLKAY ERDOĞAN ORHAN and Co-Dr. Kamala Badalova

Time(GMT+5)	Speaker	Affiliation
7:00 PM-7:20 PM	Dr. İLKAY ERDOĞAN ORHAN	Professor, Faculty of Pharmacy, Gazi University, Turkey iorhan@gazi.edu.tr
7:20 PM-7:40 PM	Dr. King-Hwa Ling	Associate Professor, Department of Biomedical Science, Universiti Putra Malaysia lkh@upm.edu.my
7:50 PM- 8:05PM	Dr. Hamdi Temel	Professor, Faculty of Medicine, Bozok University, Turkey htemelh@hotmail.com
8:05 PM-8:20 PM	Dr. Kamala Badalova	Assistant Professor, Department of General and Toxicological Chemistry, Azerbaijan Medical University, Azerbaijan kamala.badalova@mail.ru
8:30 PM – 8:45 PM	Dr. Faisal Gulzar	Assistant Professor Faculty of Pharmacy University of Lahore Pakistan faisal.gulzar@pharm.uol.edu.pk
8:45 PM- 9:00 PM	Dr. Priti Tagde	President Pharmaceutical Royal International Society, India tagde_priti@rediffmail.com
9:10 PM-9:25 PM	Dr. Urooj Javed	Assistant Professor, Dow College of Biotechnology, Dow University of Health Sciences, Pakistan urooj.javed@duhs.edu.pk
9:25 PM- 10:00 PM	Oral/Poster Presentations **(Three Minutes Elevator Pitch Competition)**	

International Conference on Biomedical and Pharmaceutical Sciences (ICBPS-2022)-Conference Schedule, August 27-28, 2022

Abstract book

INDEX

	Ihsan Ullaha, Ijaz Ahmad, Fozia	
12	Colorimetric sensing of uric acid using silver oxide doped activated carbon nanoparticles functionalized with ionic liquid *Ateeq Ahmed, Umar Nishan, Nawshad Muhammad*	
13	Epilepsy Precision Medicine & Gene Manipulations in Uterus *Dr. Tariq Zaman*	
14	Rapid identification of pathogens based on light scattering and machine learning approach *Dr. Liu Bin*	
15	Healthy Longevity Promotion *Ilia Stambler*	
16	An Immunogenic Multiple Epitope-based Vaccine Against HPIV-1: An Anti-sense RNA Virus *Dr. Muhammad Naveed*	
17	Rewarding Natural Molecules Relevant to Our Recent Outcomes in Term of Neuroprotection and Cosmetic Anti-Aging *Dr. Ilkay Erdogan Orhan*	
18	Synthesis and application areas of newly obtained semi-synthetic boron derivative compounds *Dr. Hamdi Temel*	
19	Concentration Dependence of Oxidative Effects by Sodium Nitrite on Isolated Red Blood Cells *S.Y. Huseynova, N.Sh. Jafar, H.A. Abiyev, Kh.R. Mammadova, T.M. Huseynov*	
20	The study of the antibacterial action of an extract prepared on the basis of a plant complex of wild rose, calendula and rosemary *Afsana Elman Mammadova, Zuleikha Chalabi Mammadova*	
21	Treatment of intervertebral hernias diseases by osteopathic methods *Musayeva A.G.*	
22	Some mucusisoflavones inhibitory activity *Khayala Rajab Mammadova, Jean J.K. Bankeu, Kamala Kamal Badalova, Huseyn Azizulla Abiyev*	
23	Chemical-toxicological analysis of alkaloids of the sophora alopecuroies plant *N. SH. Rasulov, L. E. Yusifova, M. E. Mammadova, L. I. Mahmudova*	
24	Study of some epilepsy patients existing in Ganja city of Azerbaijan Republic for the years 2019-2020 by classifying them according to age and gender *Bayramova L.G, Mehtiyeva Sh.N.*	
25	Combined use of polyene antibiotics and ultrasound in fundamental and practical medicine *Sultanova G.H., Mammadova Kh.R*	
26	Patient Related Outcomes for Dental Implant Therapy with Fixed Prostheses *Shahla Yusubova Rafael*	
27	Management of Ovarian Cancer in HNPCC (Hereditary Nonpolyposis Colorectal Cancer) Carrier Familie *Sevda Muslumova Alifaga, Rena Kurbanova Shahbaz*	
28	Prevalence of thyroid dysfunction among women during the first trimester of pregnancy *Hamidova Nurana Ariz, Kulieva Ilaha*	

International Journal of Natural Medicine and Health Sciences
ISSN (Online):2790-2471 ISSN (Print): 2790-2463
September 2022
Journal homepage: https://journals.iub.edu.pk/index.php/ijnms

Exploring the intracellular trafficking of cationic polymer used for gene delivery

*Shakir Ullah[a], Muhammad Faisal[a], Muhammad Shadab Jahangir[a], Neelma Nayab[a], Hira Fatima[a], Sara Bibi[a], Raheel Tahir[a], Zia ur Rehman[a], Tariq Sardar[b]
[a]Department of Biotechnology & Genetic Engineering, Kohat University of Science and Technology (KUST), Kohat-26000, Khyber Pakhtunkhwa, Pakistan
*Corresponding Author: Shakir Ullah
Email: Janishakirjani@gmail.com

ABSTRACT

Non-viral gene carriers for safe and efficient gene transfection have become of particular interest among researchers of different disciplines ranging from physical chemistry to biotechnology. Recently, polymeric vectors have been extensively studied as potentially new gene transfer agents. Until now most of the research efforts were made to optimize the gene-to-polymer weight ratio of polyplexes for safe and efficient gene transfection. For complexing gene vectors into polyplexes, cationic polymers are used as carriers. Electrostatic interaction causes polyplexes to develop spontaneously when a negatively charged nucleic acid is mixed with a polycationic polymer. Improved specificity for the target tissue, increased intracellular absorption, and lower toxicity and immunogenicity are all important factors to consider while optimizing polyplexes. In the current study, our goal was to find out various possible endocytic pathways used by commercially available cationic polymer (linear polyethylenimine) either by inhibiting or activating them. In cancer cell line, the effects of different inhibitors of specific cellular uptake pathways on polyplex absorption and subsequent gene expression were studied. Blocking either route of uptake with particular inhibitors resulted in only a minor reduction in polyplex uptake, suggesting that polyplex uptake pathways are interchangeable.

Keywords: Gene transfection, Polyplexes, Linear polyethylenimine, Inhibitors.

International Journal of Natural Medicine and Health Sciences
ISSN (Online):2790-2471 ISSN (Print): 2790-2463
September 2022
Journal homepage: https://journals.iub.edu.pk/index.php/ijnms

Study of biodegradation of arsenic^{+3} (arsenite) bacteria isolated from chicken manure

Shakeela Naz, Dr. Waheed Ullah
Department of Microbiology, Kohat University of Science and Technology Kohat
Shakeela Naz shakeelakhattak649@gmail.com
Dr.Waheed Ullah waheedwazir@gmail.com

ABSTRACT

Background: Heavy metals are toxic in nature and at high concentrations can lead to poisoning. Roxarsone is organoarsenic compound contain arsenic^{+3}(arsenite) used as food additive in the poultry industry to promote muscle growth and prevent coccidiosis. Roxarsone has the potential risk to contaminate the environment surface and underground water mainly by use of poultry industry manure as fertilizer. **Objectives:** The current study is design to isolate and characterize arsenic^{+3}(arsenite) degrading bacteria from chicken manure to convert toxic inorganic arsenic into its nontoxic form. **Materials and methods:** Total 50 chicken manure samples were collected from commercial poultry farms. Sample was inoculated by standard pour plate technique on LB and nutrient agar media and incubated at 37℃ for 24 h. then perform gram staining and biochemical tests. Bacterial isolates *(Escherichia coli, Pseudomonas, bacillus, shigella and salmonella*) was assessed for their arsenic^{+3}(arsenite) degradation at different concentration (10, 20, 40, 70, and 110 g) and examined in batch experiments. After incubation period growth was measured at 600nm absorbance using spectrophotometry DNA was extracted through phenol chloroform method. **Results:** Spectrophotometry, ICP-MS and molecular results showed that *Bacillus and pseudomonas* showed highest degradation activity at all concentration (10, 20, 40, 70 and 110 mg/kg) up to 400mg/kg. While other bacteria show no degradation activity. **Conclusion:** The results of my study suggested that metabolic activity of a microbial community isolated from chicken manure simultaneously degraded arsenic^{+3}(arsenite) by action of these bacteria we can use chicken manure as a fertilizer with no harmful effects.

Keywords: Chicken manure, bacterial isolates, arsenic^{+3}(arsenite)

International Journal of Natural Medicine and Health Sciences
ISSN (Online):2790-2471 ISSN (Print): 2790-2463
September 2022
Journal homepage: https://journals.iub.edu.pk/index.php/ijnms

Analysis of antibacterial and antibiofilm activity of chlorophyllin extracted from *Spinacia oleracea* against cariogenic *Streptococcus mutans*

Seemrose Khan[1], Dr. Muhammad Qasim[2], Qazi Athar Ud Din[3],
[1-3] Department of Microbiology, Kohat University of Sciences and Technology, Kohat.
Seemrose Khan rose050297@gmail.com
Muhammad Qasim qasim89@gmail.com
Qazi Athar Ud Din qaziathar279@gmail.com

ABSTRACT

Background: Dental caries is one of the widespread oral diseases in humans that causes irreversible damage to the tooth enamel. The occurrence of dental caries is mainly associated with the cariogenic bacteria *Streptococcus mutans*. Dental caries is a biofilm-diet-dependent health problem, and approaches against microorganisms in cariogenic biofilms are necessary. Scientists are actively looking for novel ways to manage bacteria as a result of the recent increase in antibiotic resistance. **Objectives:** The current study was designed to evaluate the antimicrobial and antibiofilm activities of chlorophyllin extracted from spinach against *Streptococcus mutans*. **Methodology:** In this study, 10 isolates of *Streptococcus mutans* were selected and the antibacterial and antibiofilm activity of chlorophyllin was evaluated by the well diffusion method and tube assay method, respectively. Biofilm formation was evaluated before and after the addition of chlorophyllin. MIC was measured with various concentrations of the chlorophyllin from spinach against *S. mutans.* **Results:** A considerable zone of growth inhibition was observed for the extracts of Chlorophyllin against *S. mutans* at the concentration of 25mg/L. Spectrophotometric results showed that Chlorophyllin extract had a significant activity for biofilm reduction produced by *S. mutans.* The Chlorophyllin extract exhibited MIC at 25 µg/ml against *S. mutans*. **Conclusion:** Chlorophyllin from *Spinacia oleracea* has antibacterial and antibiofilm properties that can be used to reduce Streptococcus mutans. Results of this study suggest that Chlorophyllin seems to be a promising approach for the control of bacterial dental infections.

Keywords: Dental caries, *Streptococcus mutans,* biofilm, Chlorophyllin, *Spinacia oleracea*

International Journal of Natural Medicine and Health Sciences
ISSN (Online):2790-2471 ISSN (Print): 2790-2463
September 2022
Journal homepage: https://journals.iub.edu.pk/index.php/ijnms

Characterization of Multi Drug Resistant *Staphylococcus aureus* in Fresh Vegetables Sold in District Kohat, Pakistan.

Saif Ullah
Department of Microbiology, Kohat University of Science and Technology, Kohat, Pakistan
saifmic102@gmail.com

ABSTRACT

*Staphylococcus aureu*s (*S. aureus)* causes different types of infections in humans and animals. The objective of presenr study was to characterize of *S. aureus* from fresh vegetables sold in different markets of District Kohat. Out of 150 retail vegetable samples, 37 (24.6 %) samples were positive for *S. aureus*. The prevalence of *S. aureus* was highest in lettuce (18/150, 12%) followed by spinach (8%), cucumber (2.60%), and carrots (2%). For antibiotics susceptibility test, 87.6% of isolates were resistant to Pencillins and Cephalosporins, whereas all isolates were susceptible to imepenem. All isolates were resistant to Amoxycillin. PCR was done for amplification of mecA gene. It was observed that 12 of the isolates carried mecA gene. Our study showed that the retail vegetables sold in Kohat are contaminated with MDR *S. aureus*. In addition, these isolates had multiple antimicrobial resistance, which should be reported to public health authorities. This data will have significant implications and provide base for future epidemiological and public health studies of this pathogen.

International Journal of Natural Medicine and Health Sciences
ISSN (Online):2790-2471 ISSN (Print): 2790-2463
September 2022
Journal homepage: https://journals.iub.edu.pk/index.php/ijnms

Characterization of Begomovirus infecting *Capsicum annuum* in District Kohat

Muhammad Irfan*, Dr. Malik Nawaz Shuja, Dr. Baharullah Khattak, Asif Iqbal
Department of Microbiology, Kohat University of Sciences and Technology (KUST), Kohat.
Muhammad Irfan* (mirfanafridi90@gmail.com)
Dr. Baharullah Khattak (baharkk75@gmail.com)
Dr. Malik Nawaz Shuja (maliknshuja@gmail.com)
Asif Iqbal (asifiqbalmwt@gmail.com)

ABSTRACT

Background: Chili (*Capsicum annuum*) is a member of the Solanaceae family which is cultivated in tropical regions, having high nutritive values. The production of chili is adversely affected by the most harmful plant viruses such as Begomoviruses of Family Geminiviridae. **Objectives:** This study was focused on identification and bioinformatic analysis in order to understand complete nucleotide sequence of chili infecting begomoviruses of district Kohat. **Methodology:** In this study, genomic DNA was isolated and subjected to amplification by using rolling-circle amplification. Virus associated satellites were amplified using specific abutting primers. Amplified products were purified and sequenced. Complete nucleotide sequences of virus was analyzed using BLASTn tool. An online ORF (Open Reading Frame) finder program was used to indicate ORFs in the genomes. For the sequence alignment, MUSCLE was used. Recombinant sequences were identified with Plotcon and Recombination Detection Program (RDP). **Results:** Based on amplification and sequencing, two full-length isolates (AI1 and AI2) corresponding to virus and one associated satellite molecule called betasatellite (AI3) were identified from chili. Both isolates showed typical genomic architecture of old world begomoviruses containing six overlapping ORFs. Two ORFs (V2 and CP) on virion sense and four ORFs (Rep, Ren, TrAP and C4) on complementary sense. Phylogenetic analysis reveals AI1 in Chili leaf curl virus (CLCV) clad and AI2 in Tomato Yellow Leaf Curl Virus (TYLCV) clad. Nucleotide sequence identity of isolate AI1 was 96.9-98.3% with ChLCV and isolate AI2 with 95.7-95.8% with ToLCNDV, which elucidates both to be variants of the same species. Similarly, isolate AI3 showed typical features of ChLCB, having a single ORF of 118AA, SCR having nonanucleotide sequence and adenine rich region. Nucleotide sequence identity of isolate AI3 was determined 96.3-98.4% with ChLCB, followed by ToLCBDB (86.1-86.8%), TbLCB (72.6-72.7%) and minimum sequence identity with CLCuGeB (63.7-64.5%). **Conclusion:** The study here is the first identification of ChLCV and TYLCNDV infecting chili in Kohat. It is concluded that, these viruses effectively reduce the crop yield and causes severe losses. New crops and crop varieties should be introduced for controlling these viruses.

International Journal of Natural Medicine and Health Sciences
ISSN (Online):2790-2471 ISSN (Print): 2790-2463
September 2022
Journal homepage: https://journals.iub.edu.pk/index.php/ijnms

Incidence and ITS-1 gene Based Phylogenetic Analysis of *Eimeria tenella* in Backyard Chicken

Faheem Ullah Khan
Department of Zoology, Kohat University of Science and Technology, Kohat, Pakistan
faheemkust44@gmail.com

ABSTRACT

The present study was conducted to determine the incidence and *ITS-1* gene based phylogenetic analysis of *Eimeria tenella* in backyard chicken in district Bannu, Khyber Pakhtunkhwa Pakistan. A total of 111 Fresh droppings of backyard chicken were collected from the chicken. Faecal samples were screened through microscopy for the presence of *E. tenella* oocysts using a standard sedimentation and floatation method. Both of microscopy positive and negative samples for *E. tenella* oocysts were subjected to DNA extraction using phenol chlroform extraction method. For molecular analysis, the *ITS-1* gene of rDNA was amplified using *E. tenella* specific primers and sequenced. The overall incidence of *E. tenella* was found in district Bannu was 35.14% in different breeds of backyard chicken like local desi, Rhode Island, Aseel, Austrolorp, and Naked Neck was 40.74%, 36.84%, 36%, 30.43%, and 29.41% respectively. Age wise the highest incidence rate was found in young chickens 39.53%. Genetic analysis showed seven distinct genotypes and detected six single nucleotide polymorphisms among the 39 *E. tenella* isolates. A phylogenetic tree was created using Mega7. The neighbour-joining tree represented that the studied *E. tenella* isolates were grouped with reference *E. tenella* isolates with strong nodal support. From the current study it can be concluded that higher infection of *E. tenella* was present in backyard chicken. These findings will also provide baseline data on genetic variations and the species conformation of *E. tenella*.

International Journal of Natural Medicine and Health Sciences
ISSN (Online):2790-2471 ISSN (Print): 2790-2463
September 2022
Journal homepage: https://journals.iub.edu.pk/index.php/ijnms

Use of indigenous *Trichoderma* Species for the control of Phytopathogenic Fungi in Tomato

Asif Iqbal, Seemrose Khan, Muhammad Anees*

Department of Microbiology, Kohat University of Sciences and Technology, Kohat.
*Corresponding author email address: dr.anees@kust.edu.pk
Asif Iqbal (asifiqbalmwt@gmail.com)
Dr. Muhammad Anees (dr.anees@kust.edu.pk)
Seemrose Khan (rose050297@gmail.com)

ABSTRACT

Background: Tomato (*Lycopersicon esculentum*) is an important commercial crop all over the world. The estimated annual production of tomatoes in Pakistan is nearly 599,700 tons per annum. Numerous fungi or fungi-like organisms such as *Rhizoctonia solani, Fusarium oxysporum, Alternaria, Aspergillus, Colletotrichum,* and *Pythium* species severely affect the tomato crops. Biological control is considered one of the best possible alternative strategy to control these phytopathogens as chemical control has toxic effects on environment. **Objectives:** This study was focused on conduction of *in vitro* and *in vivo* assays to analyze the activity of the indigenous *Trichoderma* species as putative biocontrol agents against phytopathogens. **Methodology:** In this study, three isolates of *Trichoderma* species (ISO-1, ISO-2, ISO-3) were used against phytopathogens namely *Aspergillus, Colletotrichum, Rhizoctonia solani* and *Fusarium oxysporum* using *in vitro* and *in vivo* assays. **Results:** In vitro testing of several different isolates revealed that the ISO-1 strain had the highest level of activity, measuring 65% against FO and 58% against RS. In Vivo, ISO-1 promoted the growth of plants, and the treated plants were healthy as a result of the spray; nevertheless, other plants were showing signs of wilting, and they were eventually going to die. **Conclusion:** It is concluded that the specific indigenous *Trichoderma* isolates significantly controlled the fungal phytopathogens used in the present study. Based on this report it is suggested that the putative biocontrol strain of *Trichoderma* may further be evaluated for its *in situ* ability and mechanisms.

International Journal of Natural Medicine and Health Sciences
ISSN (Online):2790-2471 ISSN (Print): 2790-2463
September 2022
Journal homepage: https://journals.iub.edu.pk/index.php/ijnms

Development of Empagliflozin formulations by direct and wet granulation process: An in-vitro comparative approach

Anas M. Hanif[1], Rabia Bushra[2],
[1] Institute of pharmaceutical sciences, Jinnah Sindh Medical University, Karachi, Pakistan
[2] Dow College of Pharmacy, Dow University of Health Sciences, Karachi, Pakistan

Corresponding author: anashanif67@yahoo.com

ABSTARCT

Background: Empagliflozin is the newest member of selective inhibitor of sodium glucose co-transporter that has successfully gained popularity due to its remarkable effects in glycemic control, blood pressure reduction and weight loss also. **Objective:** The current study was undertaken to compare the both approaches including the direct-compression and wet granulation to produce different empagliflozin trials. **Methodology:** On the basis of acceptable micromeritic properties total four powder blends two from set I (F2, F3) and two from set II (F8 and F10) were selected for compression. For direct compression, the ingredients were carefully weighed and sieved and then mixed using tumbling action. Whereas, for wet granulation the empagliflozin, Avicel® pH 102 and Ac-Di-Sol® were added and blended for 10 minutes. Later, Klucel™ was incorporated as binder to form wet mass. The wet mass was further sieved, dried and mixed with Aerosil® and magnesium stearate. **Results:** The set of trials F2, F3, F8 and F10 satisfied the pharmaceutical requirement for quality control. The drug release was also investigated by applying different invitro kinetic models. Here, the best fit model was Weibull for both the trials. The trials were also subjected to accelerated stability testing and declared passed. Among all, F2 exhibited least friability, adequate hardness; maximum drug release of 99.36± 1.1%, assay 100.33 ± 0.472 with satisfactory stability profile. Therefore, F2 was judged as the best trial. **Conclusion:** Empagliflozin tablets were successfully developed using wet and direct compression method. Based on the outcomes, it is concluded that direct compression is the preferred method to fabricate empagliflozin trials as it is cost-effective, reliable and more robust. The method is a realistic approach as it offers reduced processing time.

Keywords: Wet granulation, Direct compression, Binder, Weibull

International Journal of Natural Medicine and Health Sciences
ISSN (Online):2790-2471 ISSN (Print): 2790-2463
September 2022
Journal homepage: https://journals.iub.edu.pk/index.php/ijnms

Prevalence and Molecular detection of *Cryptosporidium* in Animal Population in District Peshawar

Ahmad Suleman Suhail
Department of Zoology, Kohat University of Science and Technology, Kohat, Pakistan
sulemansuhail@gmail.com

ABSTRACT

Cryptosporidium species are important protozoan parasites of human and veterinary importance causing diarrhea. The disease is endemic in many parts of Pakistan; however, limited data is available regarding prevalence and molecular characterization of parasite in animal population. The present study was conducted to determine prevalence of cryptosporidiosis in Peshawar. A total of 500 stool samples were collected from sheep, goats, cows and buffaloes in different villages. All the samples were processed through modified Ziehl Neelsen staining technique followed by polymerase chain reaction (PCR). 18srRNA gene was amplified through PCR. Out of all 500 samples, 132 were found positive for cryptosporidium oocysts by staining technique with a frequency percentage of 29.88%. Out of 368 microscopy negative samples 72 samples were found positive by PCR. Statistically, significant correlation was found between the age, season and gender. The results revealed that several environmental factors may also play a key role in spreading of this parasite. The current high prevalence of *Cryptosporidium* infection may be due to the lack of awareness in farmers and routine based diagnostic facilities in identification of this parasite in District Peshawar. Further studies are required to determine the molecular epidemiology of *Cryptosporidium* infection in livestock as well as pets on mass level this area and to evaluate its zoonotic potential. Furthermore, veterinary authorities are suggested to establish diagnostic facilities in district Peshawar.

International Journal of Natural Medicine and Health Sciences
ISSN (Online):2790-2471 ISSN (Print): 2790-2463
September 2022
Journal homepage: https://journals.iub.edu.pk/index.php/ijnms

Molecular detection of *Entamoeba histolytica* and *Giardia lamblia* in different water sources of district kurram khyber pakhtunkhwa

Azmat Ullah[1], Nawab Ali[1], Maqbool Rehman[1], Noor ul Akbar[2,*]
[1]Department of Biotechnology & Genetic Engineering Kohat University of Science and Technology, Kohat 26000
[2]Department of Zoology Kohat University of Science and Technology, Kohat 26000
*Corresponding Author; Dr. Noor ul Akbar
Department of Zoology Kohat University of Science and Technology, Kohat 26000
noorpak_2005@yahoo.com

ABSTRACT

The aim of the current study was to assess the molecular detection of *Giardia Lamblia* (*G. lamblia*) and *Entamoeba histolytica* (*E. histolytica*) in the water sources of district Kurram. A total of 200 water samples were collected including tube well, bore well, tap and drain water from March 2022 to August, 2022. The samples were filtered and the residue was subjected to DNA extraction with GF-1 DNA isolation Kit (Vivantis, USA) according to the manufactured procedure. The extracted DNA was amplified through specific primers the detection of *G. lamblia* and *E. histolytica* and was check through 1.5% agarose gel along with 100bp DNA ladder marker. In out of 200 water samples collected from different water sources 2(28.57%) samples were positive in fond water, 1 (0.88%) tap water, 2 stream water (25%) and 1 (5.88%) positive for *G. lamblia*. While 2 samples (28.57%) of pond water, 1(0.88%), and 2 (25%) of stream water were positive for *E. histolytica*. Overall prevalence of *G. lamblia* was 3% and *E. histolytica* was 2.5%. There were no parasites found in spring, tube well and bore water of district Kurram. The prevalence of *E. histolytica* and *G. lamblia* were found 8.33% (n=2) Kandao, in Makhrani 10.71% (n=3), and 7.14% (n=2) respectively. The prevalence rate was high in summer for both *G. lamblia* and *E. histolytica*. The current study revealed that both zoonotic parasites were present in some water sources of district Kurram specially stream water.

Keywords: *G. Lamblia; E. Histolytica; Water;* DNA; PCR

International Journal of Natural Medicine and Health Sciences
ISSN (Online):2790-2471 ISSN (Print): 2790-2463
September 2022
Journal homepage: https://journals.iub.edu.pk/index.php/ijnms

Synthesis and characterization of Titanium Dioxide nanoparticles using aqueous extract of *Solanum surattense*, their antiepileptic and cytotoxic activities

Ihsan Ullah[a], Ijaz Ahmad[a], Fozia[b].
[a] Kohat University of Science &Technology, Kohat.
[b] KMU Institute of Medical Sciences, Kohat.
Email: Ihsanullah1500@gmail.com

ABSTRACT

In present work, an efficient environment friendly method is used for the green synthesis of titanium dioxide nanoparticles (TiO_2NPs) by employing an aqueous extract of *Solanum surattense*. The Prepared TiO_2NPs were characterized by various techniques, such as EDX, XRD, FT-IR, SEM and UV-Vis Spectroscopy. The formation of TiO_2 NPs from an aqueous extract was specified by UV-visible spectroscopy showed peak at 244 nm. The reduction and stabilization of TiO_2 NPs were triggered by various functional groups present in plant extract, as revealed by FT-IR analysis. Further, the TiO_2 NPs are spherical structure with mean grain size 19.69 nm were found from XRD analysis. According to a SEM analysis, the diameter of the synthesized nanoparticles was within the range of 10-80 nm. The antiepileptic activity of the synthesized nanoparticles was also investigated in the maximal electroshock induced epileptic (MESE) and pentylenetetrazol (PTZ) models. Phenytoin (25 mg/kg) was employed as the standard for antiepileptic medication. In the PTZ model, epileptic seizures were shown, where TiO_2 NPs at 100 and 180 mg/kg significantly reduced the convulsions. The MESE model was distinguished by the appearance of extensor, clonus, and flexion. The results showed that when compared to control groups, synthetic TiO_2 NPs significantly decreased the duration of time spent in each stage (extensor, clonus, and flexion). As a result, these findings suggest that TiO_2 NPs could be a valuable source of biomedicine for the cure of epileptic seizures. Furthermore, the cytotoxicity of synthesized TiO_2 NPs showed that the concentration under 80 µg/mL were biologically compatible.

International Journal of Natural Medicine and Health Sciences
ISSN (Online):2790-2471 ISSN (Print): 2790-2463
September 2022
Journal homepage: https://journals.iub.edu.pk/index.php/ijnms

Colorimetric sensing of uric acid using silver oxide doped activated carbon nanoparticles functionalized with ionic liquid

Ateeq Ahmed[1], Umar Nishan[1], Nawshad Muhammad[2]
[1]Department of Chemistry, Kohat University of Science and Technology, Peshawar, Pakistan
[2]Institute of Basic Medical Sciences, Khyber Medical University, Peshawar, Pakistan
ateeqahmad847@gmail.com

ABSTRACT

Uric acid (UA) is a metabolic byproduct of purine nucleotides and is excreted as a urine component. Abnormality in UA metabolic regulation leads to various diseases, including hypertension, hyperlipidemia, gout, kidneys, and cardiac diseases, etc. In the present work Ag_2O-Ac NPs were synthesized through salt melting method. The Prepared nanoparticles were characterized with different analytical techniques such FTIR, XRD and SEM to determine the functional groups, structure of nanoparticles and surface morphology. Different functional groups were present on the surface of NPs having crystalline structure and round morphology. Silver oxide (Ag_2O) is well-known particles having diverse applications in sensors in biological diagnosis. Ag_2O nanoparticles (NPs) are highly stable and have unique electronic and electrochemical properties. Herein, we functionalized silver oxide doped activated carbon nanoparticles with ionic liquid and used for colorimetric sensing of uric acid. The proposed sensor showed good sensitivity and selectivity for uric acid in the presence of other interfering substances. Different parameters such as pH, time, nanoparticles amount, temperature, H_2O_2 concentration, TMB concentration were also optimized for the finest outcomes. The proposed sensor showed a wide linear range with R^2 value of 0.999. The suggested sensor provides a simple and accurate way to detect uric acid employing TMB, H_2O_2, and IL/Ag_2O-Ac NPs. The recommended sensor had a quick response time for the colorimetric detection of uric acid at 4 minutes, room temperature, and pH 4. The described approach can also be used successfully to identify uric acid in a sample of human plasma.

Keywords*:* Ionic liquid, Ag_2O-AC NPs, H_2O_2, peroxidase mimic, Uric acid, Colorimetric sensor.

International Journal of Natural Medicine and Health Sciences
ISSN (Online):2790-2471 ISSN (Print): 2790-2463
September 2022
Journal homepage: https://journals.iub.edu.pk/index.php/ijnms

Epilepsy Precision Medicine & Gene Manipulations in Uterus

Speaker: Dr. Tariq Zaman,
Research Professor at Michigan State University, USA.

TALK ABSTRACT

Neurons allow the brain and body to communicate through electrical signals. Voltage-gated ion channels like sodium, calcium, potassium and chloride channels are critical in electrical signaling. Sodium channels play an important role in the generation and propagation of the signals. Under normal conditions, these signals allow neurons to communicate, however, abnormal and excessive excitation of neurons may lead to epileptic encephalopathies. *The SCN3A gene*, encoding the type 3 sodium channel, Nav1.3, is highly expressed in the brain starting from 16 weeks of fetal life. We have discovered that the mutations in *SCN3A* result in the gain of function by altering gating properties of the channel, leaving the ion channel stuck open that in turn causes current flood leading to electric sparking, a signature of epilepsy. Magnetic resonance imaging (MRIs) and neurological evaluations further revealed that the epileptic patients carrying mutations in *SCN3A* also exhibit malformation of cortical folding indicating its possible role in brain development. This study reinforces the role of variants in *SCN3A* as a cause of neurodevelopmental disorders along a spectrum of severity that includes epilepsy and polymicrogyria and suggests that gain of channel function is an important mechanism of disease pathogenesis. Manipulating epileptic genes in utero could be used to analyze roles of genes in embryonic development and intellectual disability. These are still early days, but with precise, early prenatal diagnosis, SCN3A gene manipulation during the critical window, may help prevent brain malformations in babies.

Key gene's function flagged by his name are: Cav2.3 in Absence epilepsy (Neuron 2011), LMO4 in hyperphagia (J Neuroscience 2014), BK in Autism (J Neuroscience 2017), SCN3A in infantile epilepsy (Annals of Neurology, 2018) SCN3A in brain development (Annals of Neurology, 2020), SCN8A in childhood epilepsy (Annals of Translational Neurology, 2019) and Kit in autism and albinism (Nature Neuroscience, Under review)

International Journal of Natural Medicine and Health Sciences
ISSN (Online):2790-2471 ISSN (Print): 2790-2463
September 2022
Journal homepage: https://journals.iub.edu.pk/index.php/ijnms

Rapid identification of pathogens based on light scattering and machine learning approach

Dr. Liu Bin
School of Biomedical Engineering and Informatics, Nanjing Medical University, China

ABSTRACT

Rapid detection of pathogens has many applications in clinical laboratory departments, intensive care units, and infectious disease units. The rapid detection of pathogenic microorganisms remains one of the most challenging issues in modern medicine. Early detection of pathogens in hospitals can reduce the risk of infection in patients, especially in intensive care units. Extensive research has been carried out to find innovative techniques for rapid identification of pathogens. The research aims to reduce the length of time, reduce costs and make the operation method very simple. The study proposes a fast and label-free pathogenic detection based on multi-angle dynamic light scattering of microorganisms and machine learning algorithms. The assay prototype consists of three components: a laser beam, photodetector assembly, and a data acquisition system. The bacterial microorganisms pass through the laser beam, and the light is absorbed, refracted and scattered by the sample. The surrounding photodetectors collect the scattered light from the sample and then convert the light signal into an electrical signal (voltage). The obtained signal is further processed to extract its power spectrum features by the minimum redundancy-maximum correlation criterion (mRMR) to reduce the dimensionality of the extracted features. The selected power spectrum features were used to train a support vector machine (SVM) model to classify three different bacterial microorganisms. The resulting average identification accuracies were 99%, 87% and 94% for *Enterococcus faecalis*, *Escherichia coli* and *Staphylococcus aureus*, respectively. The overall experimental results yielded an identification rate of 93.6%, indicating that the proposed detection method has great potential for rapid label-free detection of pathogenic bacteria. The assay proposed in this study is rapid, label-free, and does not require complex operational procedures. The equipment required for these methods is clinically common and easy to implement in complex hospital settings. The algorithms developed for the given method can be modified further to detect various other pathogenic species. The developed method is valid and has the potential for pathogens diagnosis to be applied in future clinical point-of-care testing (POCT).

International Journal of Natural Medicine and Health Sciences
ISSN (Online):2790-2471 ISSN (Print): 2790-2463
September 2022
Journal homepage: https://journals.iub.edu.pk/index.php/ijnms

Healthy Longevity Promotion

Ilia Stambler, PhD
Vetek (Seniority) Association – the Movement for Longevity and Quality of Life, Israel

ABSTRACT

Healthy longevity promotion, based on amelioration of degenerative aging processes and prevention of aging-related diseases, is an international and interdisciplinary task, that involves scientific, technological and social advocacy aspects. This work will briefly survey these aspects and showcase some successful examples of healthy longevity promotion from recent years, concluding with a call for more public awareness and support for research, development and education for the amelioration of degenerative aging processes, prevention of aging-related disease and for healthy longevity promotion.

International Journal of Natural Medicine and Health Sciences
ISSN (Online):2790-2471 ISSN (Print): 2790-2463
September 2022
Journal homepage: https://journals.iub.edu.pk/index.php/ijnms

An Immunogenic Multiple Epitope-based Vaccine against HPIV-1: An Anti-sense RNA Virus

Dr. Muhammad Naveed
Department of Biotechnology, University of Central Punjab, Lahore, Pakistan

ABSTRACT

Respiratory tract infections are caused by the human parainfluenza virus (HPIV) Type-1, an antisense ribonucleic acid (RNA) virus from the family of paramyxoviridae. Infections brought on by the HPIV Type-1 virus are mostly isolated to parts of America's northwest. No effective antiviral medications or vaccines are being researched to treat HPIV-1 infections. The viral HN protein was used as a potential vaccine candidate in the current investigation to create a multiple epitope-based vaccines against HPIV-1. The pathogenicity of the hemagglutinin-neuraminidase (HN) protein, which is essential for the viral particle's attachment to the host's receptor cells, is how HPIV-1 spreads infections. According to their antigenicity, allergenicity, and toxicity scores, various epitopes were shortlisted. With an antigenicity score of 0.6406, the HN protein's identified epitopes were simultaneously linked using tailored conjugates and an adjuvant to create the subunit vaccine. The designed model of the vaccine was computationally cloned in a pET28a (+) vector and docked with multiple Toll-like Receptors (TLRs) to study the expression of the vaccine sequence in the biological system. The C-ImmSim Server's immune stimulations against a created vaccination model produced great results for the body's defensive mechanism. The VaxiJen2.0 predicted that the construct was antigenic, the Toxinpred predicted that the construct was non-toxic, and the AllerTop tool predicted that the construct was non-allergenic with and without the adjuvant sequence. The physiochemical profiling of the construct predicted that the construct was stable, and hydrophilic character was revealed by the GRAVY score. This comprehensive computational method demonstrates that the developed vaccination model has the ability to prevent HPIV-I-induced laryngotracheobronchitis infections.

International Journal of Natural Medicine and Health Sciences
ISSN (Online):2790-2471 ISSN (Print): 2790-2463
September 2022
Journal homepage: https://journals.iub.edu.pk/index.php/ijnms

Rewarding Natural Molecules Relevant to Our Recent Outcomes in Term of Neuroprotection and Cosmetic Anti-Aging

Ilkay Erdogan Orhan[1,2]
[1]Department of Pharmacognosy, Faculty of Pharmacy, Gazi University, 06330 Ankara, Türkiye
[2]Principal Member of Turkish Academy of Sciences (TÜBA), Vedat Dalokay Caddesi, No: 112, 06670, Ankara, Türkiye

ABSTRACT

Natural products have been always appealing a great attention related to pharmaceutical and cosmetic research. Pertinently, numerous natural products have been so far reported to exert promising neuroprotective activity at pre-clinical level through various mechanisms, connected to several fatal diseases such as Parkinson's disease, Huntington's disease, Alzheimer's disease, etc. Since last 20 years, we have been performing widespread screenings on pure natural products from various chemical classes as well as plant and algal extracts for their *in vitro* enzyme inhibitory activity combined with *in vivo* and *in silico* techniques. During our enduring studies on finding promising inhibitors against a number of enzymes (collagenase, elastase, xanthine oxidase, HMG-CoA reductase, tyrosinase, cholinesterase, phosphodiesterase, etc.), whose assays are set up in our lab, we have tested a good number of natural molecules, which afforded auspicious inhibition ratios as compared to the reference drugs. For instance; we have lately described yuccalechins A–C,[1] semisynthetic *O*-alkylcoumarin derivatives[2] as well as some isoquinoline alkaloids with encouraging cholinesterase inhibition, whereas newly discovered saponins from *Herniaria glabra* were inactive against cholinesterases and tyrosinase, when we tested.[3] More recently, we identified quercetin in *Erodium birandianum* as the active inhibitory substance against xanthine oxidase, while the same compound found in *Geranium glaberrimum* was also active against tyrosinase, confirmed by molecular docking experiments. On the other hand, several terpenic metabolites from *Salvia* species were shown to possess inhibitory effect against HMG-CoA reductase.[4] In this talk, the latest data from our research will be detailed covering encouraging instances of natural molecules.

International Journal of Natural Medicine and Health Sciences
ISSN (Online):2790-2471 ISSN (Print): 2790-2463
September 2022
Journal homepage: https://journals.iub.edu.pk/index.php/ijnms

Synthesis and application areas of newly obtained semi-synthetic boron derivative compounds

Prof. Dr. Hamdi Temel
Bozok University Faculty of Medicine Department of Pharmacology 66600 Yozgat, *Türkiye*

ABSTRACT

The trace mineral boron is a micronutrient that has various and vitally important roles in metabolism, which is important for plant, animal and human health, and the importance of recent research on boron has increased even more. boron has proven to be an important trace mineral as it is essential for the growth and maintenance of bone; greatly improves wound healing; positively affects the body's use of estrogen, testosterone and vitamin D; increases the absorption of magnesium; reduces levels of inflammatory biomarkers such as high-sensitivity C-reactive protein (hs-CRP) and tumor necrosis factor a (TNF-a); increases the levels of antioxidant enzymes such as superoxide dismutase (SOD), catalase and glutathione peroxidase; protects against pesticide-induced oxidative stress and heavy metal toxicity; improves the electrical activity of the brain, cognitive performance and short-term memory for the elderly; It influences the formation and activity of essential biomolecules such as S-adenosyl methionine (SAM-e) and nicotinamide adenine dinucleotide (NAD+); has shown preventive and therapeutic effects in a number of cancers such as prostate, cervical and lung cancers and multiple and non-Hodgkin lymphoma; and may help ameliorate the negative effects of traditional chemotherapeutic agents. However, none of the numerous studies to date show beneficial effects of boron at intakes of 3 mg/day.

In this study, the antioxidant effects of synthesized new boronic acid-derived compounds were determined by DPPH free radical scavenging activity, ABTS cation radical scavenging activity and (CUPRAC) copper reducing capacity methods. Anticholinesterase effects were determined by acetylcholinesterase and butyrylcholinesterase methods. In addition, antiurease and antityrosinase enzyme activity studies were also performed. The cytotoxic effects of the synthesized compounds on healthy, breast and colon cancer cell lines were determined by MTT method. Dermatological and microbial tests were performed by making cream from the obtained compounds.

Key words; Boron, DPPH, CUPRAC, Anticholinesterase effects, Antiurease and Antityrosinase

International Journal of Natural Medicine and Health Sciences
ISSN (Online):2790-2471 ISSN (Print): 2790-2463
September 2022
Journal homepage: https://journals.iub.edu.pk/index.php/ijnms

Concentration Dependence of Oxidative Effects by Sodium Nitrite on Isolated Red Blood Cells

S.Y. Huseynova[1], N.Sh. Jafar[1], H.A. Abiyev[2], Kh.R.Mammadova[2], T.M. Huseynov[1]
[1] Biophysics Institute, Azerbaijan National Academy of Sciences
[2] Medical and Biological Physics Department, Azerbaijan Medical University
E-mail: tokhus@mail.ru, xayale81@yahoo.com

ABSTRACT

Background. Nitrites are widely used in various areas of human activity and can pose a threat to his health. The basis of the toxicity of nitrites is the oxidative modification of hemoglobin (Hb) and red blood cells, leading to hypoxia of the body. At the same time, nitrites and their main metabolite nitric oxide (NO) are vital for the body (the third gas molecule after O_2 and CO_2). In this regard, the study of the concentration limits of nitrites between essentiality (vital necessity) and toxicity is an important biophysical task. The work studied the effect of various doses (0.007-7.00 mM x 30 min) of sodium nitrite (Na NO_2) on the processes of Hb oxidation, lipid peroxidation (POL) and hemolysis of human erythrocytes *in vitro*. The dependence of Hb accumulation in the erythrocyte membrane space (Hbm) on the final concentration of NaNO2 (FCNN) in the incubation medium (sodium phosphate buffer (SPB) 0.05 M + 0.15 M NaCl, pH 7.4, t 37^0C) at 30 minute incubation time. **Results.** It was found that already the lowest FCNN (0.007- 0.15 mM) lead to a noticeable accumulation of methemoglobin (MetHb) up to 20%, while the POL decreases by 15-20%; moderate low doses (0.15-0.35 mM) lead to an increase of up to 50% MetHb, and the intensity of POL does not change; relatively high doses of FCNN (0.7-3.5 mM) lead to an increase in MetHb to 90% and 25-40% increase in the intensity of POL; high FCNN (3.5-7 mM) leads to a decrease in MetHb content (up to 60%) due to the appearance of ferril hemoglobin (Fe IV) and an increase in the intensity of POL. The concentration dependency of Hbm accumulation looks like this: Low CKNs (0.007-0.15 mM) do not affect Hbm accumulation; Moderate (0.15- 0,35mM) increase -2 to 3%; High - lead to an increase to 7-8%.

At the same time, it was noted that if with moderate FCNN (0.75-0.35 nm), the methemoglobin component reaches about half, then for high FCNN it reaches 70%. If for low and moderate doses the accumulation of MetHb and its derivatives is reversible, then for high FCKN it is irreversible,

which presumably raises the question of the formation of covalent Hb bonds with the membrane structures of red blood cells. **Conclusion.** The obtained results indicate the destructive nature of the oxidative-modifying actions of high doses of $NaNO_2$ (significant activation of POL and hemolysis) in human erythrocytes, possibly affecting the structures of heme with the outputs of iron ions from the porphyrin ring.

International Journal of Natural Medicine and Health Sciences
ISSN (Online):2790-2471 ISSN (Print): 2790-2463
September 2022
Journal homepage: https://journals.iub.edu.pk/index.php/ijnms

The Study of the antibacterial action of an extract prepared on the basis of a plant complex of Wild rose, calendula and rosemary

Afsana Elman Mammadova, Zuleikha Chalabi Mammadova
Azerbaijan Medical University, Department of Pharmaceutical Technology and Management
Email: afsana.mammadova.75@mail.ru

ABSTRACT

At the Department of Medical Microbiology and Immunology of the Azerbaijan Medical University, the initial antibacterial and antifungal activity of the extract prepared on the basis of the plant complex of wild rose, calendula, rosemary (10g: 10g:10g) was studied by disk diffusion. To study these properties, Staphylococcus aureus (Staphylococcus aureus) was used as a test culture as a representative of Gram-positive bacteria, Escherichia coli (E. coli) from Gram-negative bacteria, Pseudomonas aeruginosa from pigment-forming Gram-negative bacteria (blue-green purulent rods), Candida albicans (Candida) from yeast-like fungi as a representative of fungi, Bacillus anthracoides as a representative of spore-forming gram-positive rod-shaped bacteria and Klebsiella pneumoniae as a representative of capsular bacteria, which, according to the generally accepted rule, are the main causative agents of pyoinflammatory processes.

With the disk-diffusion method, a suspension is prepared from a daily culture of microorganisms with a concentration of 1 billion microbial cells in 1 ml, i.e., the suspension is prepared by taking a small amount of a daily microbial culture from the left surface of the agar with a bacteriological loop onto a sterile saline solution, and brought to a standard from calculation of 1 billion microbial cells in 1 ml. Then separate bacterial suspensions are applied to the surface of Petri dishes containing MPA (meat-peptone agar) and Sabouraud agar. The cups are carefully moved so that the suspension is evenly distributed in all directions. After that, the remaining suspension is added with a pipette to the disinfectant solution.

To slightly dry the solution, the dishes are incubated in a thermostat at a temperature of 37°C. After that, the cups are removed from the thermostat and sterile disks are laid out on the surface of the nutrient medium inoculated with microbes, soaked for 3-5 minutes with the previously presented substances, gently pressed with tweezers so that the disks are evenly wet. After that, the cups with MPA are placed in a thermostat at a temperature of 37°C, and cups with Sabouraud at a

temperature of 28°C. As the discs become wet, the substance absorbed into them diffuses into the agar and inhibits the growth zones of bacteria. After 24-48 hours, the cups are removed from the thermostat and the results are recorded.

Table

test culture	Test substance		
	40%	70%	95%
S. aureus	5 mm	11mm	9mm
E.coli	0mm	0mm	0mm
P.aeruginoza	0mm	0mm	0mm
C.albicans	3 mm	7mm	17mm
Kl.pneumonuiae	0mm	0mm	0mm
B. anthracoides	0mm	0mm	0mm
Control (ethyl alcohol)	3 mm	3 mm	3 mm

Note. The numbers indicate the diameter of the microbial growth inhibition zones, in mm. All experiments were repeated 3-5 times.

Result: As a result of the studies, it was found that the presented substance, in relation to S. aureus cells as a representative of gram-positive bacteria, has a zone of inhibition of 5 mm in 40%, 11 mm in 70% and 9 mm in 95%. Also, in relation to Candida albicans cells from yeast-like fungi, inhibition zones of 3 mm were formed in 40%, 7 mm in 70% and 17 mm in 95%. Activity against other selected cultures of microorganisms is not registered.

International Journal of Natural Medicine and Health Sciences
ISSN (Online):2790-2471 ISSN (Print): 2790-2463
September 2022
Journal homepage: https://journals.iub.edu.pk/index.php/ijnms

Treatment of intervertebral hernias diseases by osteopathic methods

Musayeva A.G.
Rehabilitation Manual Spine Therapy Center named after Dr. Ahu Musayeva
Dr.ahu.musayeva@mail.ru

ABSTRACT

Introduction: Osteopathy is a drug-free, non-invasive manual therapy that aims to improve health across all body systems by manipulating and strengthening the musculoskeletal framework. Osteopathic methods are capable of treating diseases of the spine and diseases of internal organs associated with the spine. Intervertebral hernia is a disease of the spine, characterized by degenerative changes in the intervertebral disc, accompanied by its displacement. The danger of an intervertebral hernia is that a displaced disk puts pressure on adjacent nerve structures, causing them to irritate or completely lose their function. It may result in back pain, pain or sensation in different parts of the body, and physical disability. **The aim of our research.** The aim of our research is the treatment of intervertebral hernias by osteopathic methods. **Methods:** The main research method is the using of river stones of various forms and plant thorns. The mechanisms of treatment with river stones and spines are interdependent. During this treatment, spines are applied to non-polar points, i.e. to inactive areas. With acupuncture, needles are inserted into biologically active points. This is the difference between our treatment. Also, we use herbal medicine, apitherapy, apitoxitherapy, hirudotherapy, oil products, reflexology methods. **Results:** İntervertebral hernias is the most commonly encountered category of patients, the vast majority of whom, turn to us with acute pain and limited movements, which in turn is negatively reflected in the quality of life of patients. We present to you the results of our treatment in 403 patients. 310 patients of them (76.92%) applied to us before surgery, and 93 patients of them (23.07%) applied to us after surgery. After the treatment we obtained 100 percent patient satisfaction, and restoration of 100% normal life.

Keywords: Osteopathy, intervertebral hernias, musculoskeletal disease

International Journal of Natural Medicine and Health Sciences
ISSN (Online):2790-2471 ISSN (Print): 2790-2463
September 2022
Journal homepage: https://journals.iub.edu.pk/index.php/ijnms

Some mucusisoflavones inhibitory activity

Khayala Rajab Mammadova[1, 4], Jean J.K. Bankeu[2], Kamala Kamal Badalova[3], Huseyn Azizulla Abiyev[1]

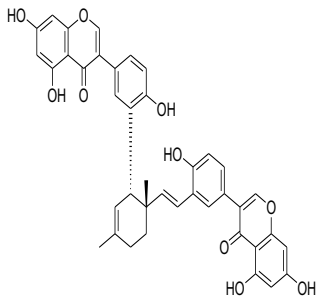
[1] Department of Medical and Biological Physics, Azerbaijan Medical University
[2] Department of Chemistry, Faculty of Science, University of Bamenda, Cameroon
[3] Azerbaijan Medical University
[4] Botany Institute, Azerbaijan National Academy of Sciences
E-mail: xayale81@yahoo.com
kamala.badalova@mail.ru

ABSTRACT

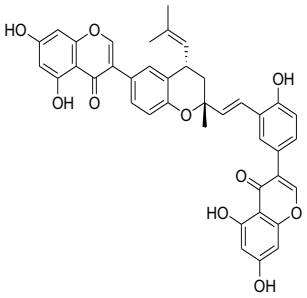
It has been isolated three isoflavone dimer derivatives, mucusisoflavone A, mucusisoflavone B, mucusisoflavone C, and were tested inhibitory properties against of β – glucuronidase enzyme. Mucusisoflavone A (IC_{50} 0.68 ±0.01 μM) displayed the best potency and was more than 71 times active than the reference drug. **Introduction**: β-Glucuronidase plays a pivotal role in the hydrolysis of β-glucuronides. Glucuronides are formed in the body during the xenobiotic detoxification process. A large number of toxic compounds are eliminated safely from the body as glucuronides. Since β-glucuronidase hydrolyzes these conjugates, the inhibition of this enzyme may protect the body from the reintroduction of the original xenobiotics. Evidence suggests that inhibiting the β-glucuronidase enzyme has a possible role in controlling different stages in cancer induction. β-Glucuronidase (EC 3.2.1.31) is an inducible enzyme elaborated by anaerobic *E. coli, Peptostreptococcus, Bacteroides,* and *Clostridia*. Studies have associated bacterial β-glucuronidase primarily to *E. coli* and Enterobacteriaceae. Enhanced activity of this enzyme increases the enterohepatic recirculation of toxins, hormones, drugs, and carcinogens. Recent studies showed that the Gram-positive bacteria in the gastrointestinal tract are also partially involved in β-glucuronidase activity. Initiation of colon cancer is believed to be associated with β-Glucuronidase while its higher levels in intestines are connected with increased risk of colon cancer. These reports emphasize the pharmacological significance for the development of new and specific inhibitors of this enzyme. **Material and methods:** Commercially reagents, solvents, β-glucuronidase (*E.coli*), the substrate (p-nitrophenyl-β-D-glucuronide), and standard inhibitor (D-saccharic acid 1, 4 - lactone) were purchased from Merck Germany, Sigma Chemical Co., and Fluka. Water was deionized by Simplicity Water Purification System (Millipore). All enzymatic

reactions were carried in triplicates in microtitration plates, using Spectra Max -340 spectrophotometer (Molecular Devices). The β-Glucuronidase activity was determined by measuring the absorbance at 405 nm by the method of Collins with the following modification. The total reaction volume was 250 µL, the reaction mixture contained 190 µL of 0.1M acetate buffer pH 7.0, 5 µL of the enzyme (30U) and 50 µL of 0.4mM p-nitrophenyl-β-D-glucuronide. The mixture was incubated at 37◦C for 30 min. The plates were read on a Spectra MAX-340 at 405nm. The inhibitory activity was determined in the above reaction mixture excepting that 5 µL of each test compound dissolved in DMSO was mixed with the enzymes and incubated at 37◦C for 30 min just before the addition of the substrates to initiate the reaction. The inhibitory activity (%) was calculated as % of Inhibition = (E-S)/E]x100, where E is the activity of enzyme without test material and S is the activity of the enzyme with the test material. IC_{50} determinations were performed as shown below: The concentrations of test compounds that inhibit the hydrolysis of p-nitrophenyl-β-D-glucuronide by 50% (IC_{50} value) were determined by monitoring the effect of increasing concentrations of these compounds in the assay. The IC_{50} values were calculated using the EZ-Fit Enzyme Kinetic program (Perrella Scientific Inc., Amherst, U.S.A.) **Result and Discussion:** It has been isolated three isoflavone dimer derivatives, mucusisoflavone A, mucusisoflavone B, mucusisoflavone C, and were tested inhibitory properties against of β – glucuronidase enzyme. IC_{50} value of Mucusisoflavone A was 0.68 ±0.01 µM, IC_{50} value of Mucusisoflavone B was 13.96 ±1.23 µM, IC50 value of Mucusisoflavone C was 3.08 ±0.05 µM while the IC_{50} value of standart inhibitor (D-saccharic acid 1, 4 - lactone) was 48.40±1.25. All of these mucusisoflavones are active compounds against of β – glucuronidase enzyme comparing with standard inhibitor. But Mucusisoflavonee A (IC_{50} 0.68 ±0.01 µM) displayed the best potency and was more 71 times active than the reference drug. Interestingly, though possessing the same isoflavone units, mucusisoflavone A was more active than mucusisoflavone B and mucusisoflavone C, indicating that the presence of a cyclohexene ring may significantly enhance the inhibitory activity of these isoflavone dimer derivatives. **Conclusions:** Isoflavone metabolites are known to possess antifungal, antiplasmodial, and antioxidant activities. Consumption of isoflavones is also associated with human health benefits such as the decreased risk of heart disease, reduces menopausal symptoms, and reduced risk of some hormone-related cancers. This literature information supports the results of the *in vitro* enzyme inhibitory evaluation of several compounds isolated from *F.mucuso* toward β – glucuronidase enzyme.

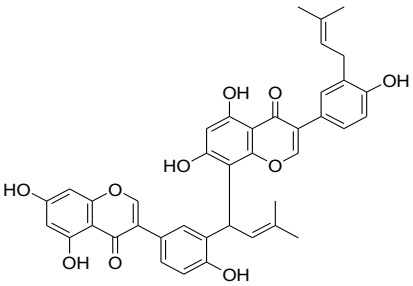
Figure 1. The structure of the mucusisoflavone A, B, C



Mucusisoflavone A



Mucusisoflavone B



Mucusisoflavone C

Keywords: Mucusisoflavone A-C, β-glucuronidase, inhibition, IC_{50} values

International Journal of Natural Medicine and Health Sciences
ISSN (Online):2790-2471 ISSN (Print): 2790-2463
September 2022
Journal homepage: https://journals.iub.edu.pk/index.php/ijnms

Chemical-Toxicological analysis of alkaloids of the Sophora Alopecuroies plant

N. SH. Rasulov, L. E. Yusifova, M. E. Mammadova,
L. I. Mahmudova
Department of General and Toxicological Chemistry, Azerbaijan Medical University, Baku.
E-mail: mlhtmammadova@gmail.com

ABSTRACT

The main goal in preparing the scientific work is taking the alkaloid complex from the plant "Foxtail-like Sophora" - "Sophora alopecuroides L." and analyzing it through thin layer chromatography (TLC), identifying the individual alkaloid with the corresponding alkaloid in the literature, and carrying out the toxicological analysis of the obtained alkaloid complex by examining it in the liver of cattle.*Used as material for scientific work:* raw material of Foxtail-like Sophora plant - aerial part (leaf and stem) 100 g. It was collected from the Saray settlement in 2020, dried and crushed in a dark room. TLC solvents were chloroform:methanol:ammonia 9:1:0.1 and dichloromethane:methanol: 25% ammonia 2:8:0.2; was taken in proportion. Aluminum plate – Macherey-Nagel Alugram® Sil G/UV254 (Germany). Clarifying reagent – Dragendorf reagent. Ammonia (10%, 25%), sulfuric acid (8%), ethyl alcohol (95%), chloroform, dichloromethane, litmus paper, cattle liver. *Methods:* Methodology of extraction of alkaloids, method of separation into individual alkaloids by TLC. To determine the alkaloid content and number of the aerial part of the Foxtail-like Sophora plant, 100 g of the sample was treated with 10% ammonia solution, and after 2 hours, chloroform was added until the surface of the raw material was completely covered with the solvent. After 48 hours, the extract was separated and a new portion of chloroform was added in the same manner. The extraction process was repeated three times. The extracts were combined and concentrated to a volume of 100 ml on a water bath. The chloroform solution was treated 6 times with 100 ml of 8% sulfuric acid solution in a separatory funnel. After the sulfuric acid solutions were combined, they were basified with 25% ammonia solution to pH 10 by cooling. Then the aqueous solution is treated with chloroform (100 ml) 6 times. At this time, the alkaloids in salt form were transferred to the chloroform part, and the chloroform extracts were combined and concentrated in a water bath until 10 ml remained. TLC method was used to determine alkaloids. The chloroform substance was concentrated to a dry mass (≈0.71 g), dissolved in ethyl

alcohol (20 ml), added to minced liver (100 g) and kept at a temperature of about 36°C with periodic stirring for 5 hours. After this time, 95% ethyl alcohol was added until the material was covered. Then, the mixture was acidified with 10% oxalic acid until the pH value was 2-3 and kept at a temperature of 25-30°C for 1 day with periodic mixing. After 1 day, the alcoholic extract was separated from the crushed material and this process was repeated 3 times, 1 day each time. Acidic alcoholic extracts were filtered through a paper filter soaked in ethyl alcohol. The combined extract was transferred to a porcelain dish and condensed in steam until a syrup-like mixture was obtained. Ethyl alcohol (96%) was added to the obtained mass until precipitation of extraneous impurities was complete. The resulting precipitate was again filtered through a paper filter soaked in ethyl alcohol. The operation was repeated 5 times until no precipitate was removed due to the effect of alcohol. Purified water (25 ml) was added to the syrup-like mass cleared of extraneous impurities, and the resulting precipitate was again filtered through a paper filter. The acidic water-alcohol mixture was transferred to a separatory flask, basified with 25% ammonia by cooling under running water until pH 10, and extracted 3 times with chloroform, 15 ml and using a fresh portion of the solvent each time. The obtained extracts were collected and dehydrated with anhydrous sodium sulfate and 2 samples of 2 ml volume were obtained by evaporation and analyzed by TLC method and compared with the previous extracts. As a result, 3 orange spots belonging to alkaloids (Rf = 0.43, 0.58, 0.33) and 3 orange spots belonging to alkaloids (Rf = 0.9, 0.17, 0.13) were determined in the chloroform extract.

International Journal of Natural Medicine and Health Sciences
ISSN (Online):2790-2471 ISSN (Print): 2790-2463
September 2022
Journal homepage: https://journals.iub.edu.pk/index.php/ijnms

Study of some epilepsy patients existing in Ganja city of Azerbaijan Republic for the years 2019-2020 by classifying them according to age and gender

Bayramova L.G., Mehtiyeva Sh.N.
Azerbaijan Medical University, Department of Neurology, Baku, Azerbaijan

ABSTRACT

Introduction: Epilepsy is an actual medical and social problem, and currently the incidence of epilepsy in the world is 50-70 people per 100,000 people, and the prevalence is 5-10 people per 1000 people. Epilepsy is a complex disorder in which one or more groups of neurons become persistently, abnormally, and unexpectedly activated, causing excessive activity in some areas. **The purpose of the study.** The purpose of the study is to classify some epilepsy patients aged 0-70 years old in Ganja city in 2019-2020 years according to age groups and genders. **Material and methods**: In the course of the study, the collection of anamneses, neurological examination, archival research, complete statistical observation method, method of registration of referrals in cases of illness, neurophysiological and neuroradiological methods were used. **Results and discussion:** The current work is devoted to the study of epileptic patients aged 0-70 years in the city of Ganja during 2019-2020 years. Out of 130 patients, 68 (52.30%) were men and 62 (47.69%) were women. The higher rate observed in men is associated with a higher prevalence of seizure etiologies (eg, cerebrovascular disease, head trauma, alcohol-related seizures). In our study, patients aged 0-70 years were studied and divided into genders and age groups. The dynamics of the disease increased in men until 20-29 years of age (16.92%), and then a decrease was observed. Of the studied patients, the disease was observed in 8 people, 4 (3.07%) men and 4 (3.07%) women in the age range of 60-69 years. Epilepsy was observed in only one woman (0.76%) over 70 years old.

Table. Classification of patients with epilepsy according to age groups and gender in 2019-2020 years in Ganja.

age group	male	female	age group	male	female	age group	male	female
0-4	1.53%	0.76%	15-19	8.46%	3.07%	40-49	7.69%	10.76%
5-9	3.07%	1.53%	20-29	16.92%	3.84%	50-59	1.53%	6.15%
10-14	3.84%	0.76%	30-39	6,15%	16.92%	60-69	3.07%	3.07%

Conclusion. Our study covers the study of 130 patients with epilepsy who were present in the city of Ganja during 2019 – 2020 years. In our study, patients from 0 to 70 years of age were divided into sexes and age groups, and the dynamics of the disease was monitored.

Key words: epilepsy, epileptic seizures, Ganja city, epidemiology

International Journal of Natural Medicine and Health Sciences
ISSN (Online):2790-2471 ISSN (Print): 2790-2463
September 2022
Journal homepage: https://journals.iub.edu.pk/index.php/ijnms

Combined use of polyene antibiotics and ultrasound in fundamental and practical medicine

Sultanova G.H.[1], Mammadova Kh.R.[1,2]
[1]Institute of Botany of the National Academy of Sciences of Azerbaijan
[2]Medical and Biological Physics Department, Azerbaijan Medical University
E-mail- sultanqul@mail.ru

ABSTRACT

The development of chemically modified polyene antibiotics expands the range of their application to solve fundamental and applied problems. The search for new macrocyclic polyene antibiotics for the purpose of their use in the treatment of malignancies and invasive mycoses is very relevant. The effect of new polyene antibiotic derivatives modified in certain parts of their molecules on lipid and biological membranes has been shown. Comparative analysis of the effect of chemically transformed polyene antibiotics pimaricin, nistatin, lucensomycin, amphotericin B and levorin A on biological objects *in vivo* and *in vitro* shows that tamphotericin B and levorin and their derivatives have the greatest biological activity. Erythrocyte hemolysis induced by ultrasound and alkyl derivatives of amphotericin B and levorin modified by amine and carboxyl groups has been studied. A change in the mechanical resistance of red blood cells under the influence of polyenes was revealed, which is possibly associated with a violation of the micro viscosity of the protein-lipid system of the membranes of red blood cells by forming molecular ion channels in them. The alkyl derivatives of amphotericin B and levorin have been found to have high antifungal activity and lower toxicity than the initial antibiotics. During the study of the effect of alkyl derivatives of levorin A and amphotericin B on oncogenic cell cultures *in vitro,* the anti-tumor effect of methylated levorin and amphotericin B was detected. Studies in this direction made it possible to propose a scientifically based recommendation for the creation of the most effective drugs with improved medical and biological properties. Macrocyclic polyene antibiotics (PAs) have been used in the clinic for many years as antifungal drugs. They are producers of a certain group of soil microorganisms. The most effective of them are nistatin, amphotericin B, mycoheptin, trichomycin, pimaricin and levorin, used in the treatment of deep-system mycoses. However, their relative toxicity, poor water solubility limits their use in medical practice in the treatment of invasive mycoses and cancer. In this regard, it became necessary to search for new, more effective

and less toxic drugs with high biological activity. The effect of alkyl derivatives of amphotericin B and a number of derivatives of levorin A modified by amine and carboxyl groups on ultrasound and induced hemolysis (combined action of ultrasound and polyene antibiotics) of red blood cells has been studied. At the same time, *in vitro* studies were conducted on the cytotoxicity of alkyl derivatives of the aromatic polyene antibiotic levorin A - methyllevorin, butyllevorin, isolevoridone, as well as the parent amphotericin B in *HeLa* (cervical cancer) and *C6* (rat glioma) cell cultures. Amphotericin B derivatives - methamphocin, ethamphocin, carboamphocin and levorin-levoridone derivatives, isolevoridone, carbolevorin have been shown an isotonic suspension of red blood cells have hemolytic activity in [C] 10^{-5}-10^{-4} M. However, treatment of red blood cells with a pure dimethyl sulfoxide solution at a concentration of 1-10% as well as propamphocin and butamphocin, does not lead to hemolysis. Changes in the mechanical strength of red blood cells may be associated with impaired micro viscosity of the protein-lipid system. Apparently, antibiotics, introducing themselves into the lipoprotein region of the membrane, are able to interact with hydrophobic regions of the membranes of red blood cells and form structural channels in them that have selective permeability of the membranes to ions. At the same time, the results of the study of the activity of ATP-ase of red blood cell membranes may explain the slowdown of the hemolysis process under the action of some drugs. As with the action of a number of oxypyridines, some of the PAs adsorbing on the membrane probably protect it from destruction, i.e., interfere with oxidative processes and free radical transformations of the lipid and protein components of the membrane. The presence of cholesterol in the erythrocyte membrane determines its sensitivity to PA.

Keywords: macrocyclic polyene antibiotics (PA), chemically modified alkyl derivatives, antibiotic resistance, hemolytic resistance, ultrasonic waves

International Journal of Natural Medicine and Health Sciences
ISSN (Online):2790-2471 ISSN (Print): 2790-2463
September 2022
Journal homepage: https://journals.iub.edu.pk/index.php/ijnms

Patient Related Outcomes for Dental Implant Therapy with Fixed Prostheses

Shahla Yusubova Rafael
Azerbaijan Medical University

ABSTARCT

Aim: To explore the available literature compiling studies that discuss patient related outcomes in terms of function and comfort for dental implants with fixed restorations. **Materials and Methods:** All included studies were based on personal evaluation from adult male or female patients who received dental implant(s), restored with fixed restorations. The evaluation from the selected papers was done through face-to-face interviews, telephone interviews, mailed or self-administrated questionnaire evaluations. Also, electronic mail or Web data collection that had addressed the patient's comfort or function. Review articles were searched for any related studies that can be included in this systematic review. **Results:** 107 studies were initially identified from the search; 13 studies met the inclusion criteria and were selected for this systematic review. The analysis of the data related to comfort shows that the patients' satisfaction ranged between 75.3% to 99.5% with an average of 90.8% and a standard error (SE) of ±2.6. Data analysis of the perception of function's improvement showed that patients' satisfaction ranged between 69.9% to 100% with an average of 92.1% and a standard error (SE) of ±2.4. **Conclusion:** The results indicate that the patient's satisfaction in terms of function and comfort for treatment with dental implants and fixed restorations is relatively high and this is an acceptable modality of treatment. Further standardized studies with larger sample sizes and standardized evaluation scales are recommended.

Keywords: Patient outcome, Satisfaction, Dental implant, Fixed prosthesis, Comfort, Function, Dentistry, Systematic review

International Journal of Natural Medicine and Health Sciences
ISSN (Online):2790-2471 ISSN (Print): 2790-2463
September 2022
Journal homepage: https://journals.iub.edu.pk/index.php/ijnms

Management of Ovarian Cancer in HNPCC (Hereditary Nonpolyposis Colorectal Cancer) Carrier Familie

Sevda Muslumova Alifaga, Rena Kurbanova Shahbaz
Azerbaijan Medical University

ABSTRACT

Background: Over half the cancer deaths in HNPCC families are due to extra-colonic malignancies that include endometrial and ovarian cancers. The benefits of surveillance for gynecological cancers are not yet proven and there is no consensus on the optimal surveillance recommendations for women with MMR mutations. **Methods:** We performed a systematic review of the literature and evaluated gynecological cancer risk in a series of 631 Azerbaijan HNPCC families classified into either Lynch Syndrome (LS, MMR mutations detected) or HNPCC. **Results:** Published data clearly indicates no benefit for ovarian cancer screening in contrast to risk reducing surgery. We confirmed a significantly increased risk of OC in Azerbaijan LS families (OR = 4,6, $p < 0.001$) and an especially high risk of OC was found for women under 50 years of age: OR = 32,6, $p < 0.0001$ (95% CI 12,96-81,87). The cumulative OC risk to 50 year of life was calculated to be 10%. Six out of 19 (32%) early-onset patients from LS families died from OC within 2 years of diagnosis. We confirmed a significantly increased risk of EC (OR = 26, 95% CI 11,36-58,8; $p < 0,001$). **Conclusions:** Due to the increased risk of OC and absence of any benefit from gynecological screening reported in the literature it is recommended that prophylactic oophorectomy for female carriers of MMR mutations after 35 year of age should be considered as a risk reducing option. Annual transvaginal ultrasound supported by CA125 or HE4 marker testing should be performed after prophylactic surgery in these women. Due to the high risk of EC it is reasonable to offer, after the age of 35 years, annual clinical gynecologic examinations with transvaginal ultrasound supported by routine aspiration sampling of the endometrium for women from either LS or HNPCC families. An alternative option, which could be taken into consideration for women preferring surgical prevention, is risk reducing total hysterectomy (with bilateral salpingo-oophorectomy) for carriers after childbearing is complete.

Keywords: Adnexectomy; Endometrial cancer; HNPCC; Lynch syndrome; Ovarian cancer.

International Journal of Natural Medicine and Health Sciences
ISSN (Online):2790-2471 ISSN (Print): 2790-2463
September 2022
Journal homepage: https://journals.iub.edu.pk/index.php/ijnms

Effects of Experimental Sleep Restriction on Energy Intake, Energy Expenditure, and Visceral Obesity

Ali-zade Leman İsmail
Azerbaijan Medical University

ABSTRACT

Although the consequences of sleep deficiency for obesity risk are increasingly apparent, experimental evidence is limited and there are no studies on body fat distribution.

Objectives: The purpose of this study was to investigate the effects of experimentally-induced sleep curtailment in the setting of free access to food on energy intake, energy expenditure, and regional body composition. **Methods:** Twelve healthy, nonobese individuals (9 males, age range 19 to 39 years) completed a randomized, controlled, crossover, 21-day inpatient study comprising 4 days of acclimation, 14 days of experimental sleep restriction (4-hour sleep opportunity) or control sleep (9-hour sleep opportunity), and a 3-day recovery segment. Repeated measures of energy intake, energy expenditure, body weight, body composition, fat distribution and circulating biomarkers were acquired. **Results:** With sleep restriction vs control, participants consumed more calories ($P = 0.015$), increasing protein ($P = 0.050$) and fat intake ($P = 0.046$). Energy expenditure was unchanged (all $P > 0.16$). Participants gained significantly more weight when exposed to experimental sleep restriction than during control sleep ($P = 0.008$). While changes in total body fat did not differ between conditions ($P = 0.710$), total abdominal fat increased only during sleep restriction ($P = 0.011$), with significant increases evident in both subcutaneous and visceral abdominal fat depots ($P = 0.047$ and $P = 0.042$, respectively). **Conclusion:** Sleep restriction combined with ad libitum food promotes excess energy intake without varying energy expenditure. Weight gain and particularly central accumulation of fat indicate that sleep loss predisposes to abdominal visceral obesity.

Key words: sleep, energy, acclimation, body weight, visceral

International Journal of Natural Medicine and Health Sciences
ISSN (Online):2790-2471 ISSN (Print): 2790-2463
September 2022
Journal homepage: https://journals.iub.edu.pk/index.php/ijnms

Long-Term Postoperative Perfusion Status in Giant Retinal Tears

Aybeniz Abdullayeva Muzamil
Azerbaijan Medical University

ABSTRACT

Background: Information on the long-term perfusion status of patients after successful surgery for giant retinal tear (GRT) macula-off rhegmatogenous retinal detachment (RRD) is limited. Purpose: To examine long-term structural, functional, and perfusion outcomes in normal control eyes and eyes treated for different degrees of GRT-associated extensions of RRD. **Methods:** One emmetropic normal eye (control), one healthy highly myopic eye (control myopic), and three eyes surgically treated for GRT (surgical), were included in the study for a long-term comparison of study outcomes. The surgical eyes were classified based on the degree of GRT-associated RRD extension as follows: one eye with GRT-associated RRD extension < 180˚; one eye with GRT-associated RRD extension between 180˚ - 270˚; and one eye with GRT-associated RRD extension > 270˚. Structural, functional, and perfusion outcomes were compared with those of the control eyes. **Results:** All three eyes were phakic and the condition was monocular. The mean age of the patients was 48.67 ± 8.50 years (range, 39 - 55 years). All three eyes had GRT macula-off RRD. The mean preoperative time for GRT surgery was 1.2 weeks. The mean pre- and postoperative best corrected visual acuities (BCVA) were 1.87 logMAR and 0.46 logMAR, respectively. The mean postoperative follow-up period was 19.67 ± 5.69 months. Proliferative vitreoretinopathy resulted in multiple surgeries in one eye (31.5%). Long-term postoperative optical coherence tomography (OCT) showed abnormal retinal thickness, ellipsoid zone disruption, and external limiting membrane line discontinuities in one eye. OCT angiography yielded abnormal perfusion indices in the surgically treated eyes. **Conclusion:** Our data showed multiple structural alterations in spectral-domain OCT biomarkers. One eye that developed secondary epiretinal membrane (ERM) proliferation showed a significantly improved BCVA after proliferation and internal limiting membrane were removed. Perfusion findings were correlated with the final BCVA. Despite a fully reattached retina without ERM proliferation, GRT-associated RRD has a guarded functional prognosis.

Key words: retinal, surgical, eyes, emmetropic, monocular, tears

International Journal of Natural Medicine and Health Sciences
ISSN (Online):2790-2471 ISSN (Print): 2790-2463
September 2022
Journal homepage: https://journals.iub.edu.pk/index.php/ijnms

Injectable Gels with Potential Use in Endodontics

Aliyev Galandar Khanlar
Azerbaijan Medical University

ABSTRACT

İntroduction. To formulate a thermos-reversible hydrogel using methyl-cellulose, carbon dots and inorganic salts to achieve physiologically compatible gelation temperature; to test cytotoxic effects of formulation against dental pulp stem cells. **Material and Methods:** A 5% w/v methylcellulose (MC) solution was prepared and equal volumes of NaCl aqueous solution were added to make various sodium chloride salt concentrations and reach the final MC concentration of 2.5%. Samples were analyzed using a shear rheometer to monitor complex shear viscosity as a function of temperature to arrive at onset gelation temperature closest to targeted temperature. Carbon dots were synthesized by thermal method using ammonium citrate as nitrogen precursor. Dental pulp stem cells were isolated from extracted third molars and cultured under standard aseptic conditions. Cells were seeded onto well plates containing optimized hydrogels and cell proliferations were monitored at 1, 2, 5 and 14 days. Cytotoxicity of the samples was tested against a positive control (UltraCal Calcium Hydroxide) and a negative control (cells with no gel). **Results:** The optimal gelation temperature (30-37 °C) was achieved by using 2.5% methylcellulose, 8.0% sodium chloride and 5 ug/mL carbon dots. The gelation temperature was found to be significantly affected by the salt concentration and slightly affected by concentration of carbon dots. The gelation temperature was inversely proportional to the NaCl concentration. Cytotoxicity testing of hydrogels revealed adequate proliferation of dental pulp stem cells when compared to values produced by calcium hydroxide, indicating a level of biocompatibility conducive to proliferation of these cells. **Conclusion:** Cellulose-based hydrogels incorporating carbon dots can be considered as a potential formulation for use as a scaffold during regenerative endodontic procedure. This study utilizes a simple, inexpensive approach to fabricate such an injectable noncytotoxic gel. However, antibacterial effect of the gel needs to be evaluated and is the subject of our future studies.

Key words: inorganic, methylcellulose, carbon, dental pulp, calcium, temperature

International Journal of Natural Medicine and Health Sciences
ISSN (Online):2790-2471 ISSN (Print): 2790-2463
September 2022
Journal homepage: https://journals.iub.edu.pk/index.php/ijnms

Atopic dermatitis

Mammadova Gulnara Salam, Mammadkhanova İrada Arif
Azerbaijan Medical University

ABSTRACT

Atopic dermatitis and hand eczema are widespread in the general population with an estimated one-year prevalence in adults of 2–15% and 10%, respectively. Filaggrin deficiency has been shown to result in impaired skin barrier integrity and the FLG mutations are further identified as the strongest genetic factor for the development of atopic dermatitis. Additionally, FLG mutations have been found to be predictive factors of persistent hand eczema in individuals with atopic dermatitis; the interplay between hand eczema, FLG mutations and atopic dermatitis is, however, still to be elucidated. The personal and societal consequences of dermatitis are substantial and include reduced quality of life, increased healthcare costs and, in the worst case, sick leave, job change, rehabilitation and/or disability pension. It is currently unknown whether FLG mutation carriers, who often experience severe and persistent disease, experience worse consequences than do individuals without FLG mutations. The overall objective of the thesis was to investigate the epidemiology of dermatitis and look into the role of genetic pre-disposition, defined by FLG mutations, and personal consequences. In detail the aims were: To investigate the epidemiology of dermatitis in the general population including prevalence, anatomical localization and association with FLG mutations. To investigate incidence and predictive factors of hand eczema in the general adult population. To characterize the adult dermatitis patient with and without FLG mutations focusing on health-related quality of life (HRQoL), skin characteristics and comorbidity. To investigate occupational consequences and previous work in risk occupations among the adult population with or without dermatitis and FLG mutations. **Methods:** This abstract builds on data from two populations: I) a population-based cohort study with a 5-year follow-up called “Health2006” and II) a cross-sectional study of adult dermatitis patients included with atopic dermatitis and/or hand eczema. In addition, all participants completed the same questionnaire about skin symptoms and dermatitis. Hand eczema, for both populations, was self-reported

whereas a history of atopic dermatitis was defined by the criteria in the general populations and was clinician diagnosed in the patients. We also found that FLG mutations were associated with dermatitis on the hands and feet in individuals with atopic dermatitisa. In our analyses investigating predictive factors of hand eczema in adult in the general population, we found that a history of atopic dermatitis predicts both incident and persistent hand eczema (odds ratio (OR) = 9.0; 95% confidence interval (CI) 5.6–14.4 and OR = 3.0; 95% CI 1.7–5.2, respectively). In contrast, FLG mutations predicted only persistent hand eczema in individuals with atopic dermatitis and were not associated with incident hand eczema in adults, suggesting that FLG mutations as a predictive factor for hand eczema decrease with time. Lastly, contact sensitization was also associated with persistent hand eczema (OR = 2.5; 95% CI 1.2–5.0), independently of a history of atopic dermatitis. In relation to HRQoL, we found that patients with atopic dermatitis (± hand eczema) and FLG mutations reported reduced HRQoL when compared with patients with FLG wild type suggesting that this subgroup of patients might experience an additional challenge in their everyday life. Lastly, we found that self-reported dermatitis, particularly in individuals with FLG mutations, was significantly associated with receiving disability pension in the general population. However, the primary diagnosis for awarding disability was unknown. **Conclusion:** Taken together, our results indicate that FLG mutation carriers with atopic dermatitis are a subgroup of individuals who stand out on several parameters. The parameters are biologically manifested by increased prevalence of foot dermatitis and increased persistence of hand eczema, psychologically manifested by reduced HRQoL, and socially manifested by the finding that self-reported dermatitis was associated with receiving disability pension, particularly in individuals with FLG mutations. These findings point towards FLG mutations predisposing to increased severity, highlighting the need for increased skin awareness in this subgroup.

International Journal of Natural Medicine and Health Sciences
ISSN (Online):2790-2471 ISSN (Print): 2790-2463
September 2022
Journal homepage: https://journals.iub.edu.pk/index.php/ijnms

Development of technology for obtaining phytofilm for the treatment of some diseases of the oral cavity

Sarkhan.A. Tagiev, Afsana E. Mammadova, Sara Eghbalkharazi, Atousa Taghi Khahan
Department of Pharmaceutical Technology and Management,
Azerbaijan Medical University, Baku

ABSTRACT

In the complex treatment of inflammatory periodontal diseases, along with the use of antibiotics, anti-inflammatory drugs, herbal preparations in the form of tinctures and decoctions are widely used. However, their use often gives a temporary effect, providing a short-term remission, due to the rapid decrease in the concentration of the drug in the lesion. In this regard, a promising direction in dentistry is the development of film coatings based on soluble polymers with a prolonged action. Valuable plants in the treatment of periodontal diseases are Miswak or Siwak, from the branches and roots of the Arak tree (Salvadora persica), Chamomile (Matricaria chamomilla, syn. Matricaria recutita), Marigold, or Calendula officinalis (Caléndula officinalis), Cloves - which is dried unopened tropical clove buds (Syzygium aromaticum), decoctions and infusions of which are widely used in folk medicine as wound healing agents for purulent wounds, ulcers and stomatitis. The aim of the study was to develop a new dosage form based on the phyto-complex. At the same time, we were faced with the task of obtaining a new dental drug in the form of a film. From marigold and chamomile flowers, dried clove buds, miswak were obtained using 90% ethyl alcohol by maceration (1:10) liquid extracts. We used Arabic gum as a film former, polyethylene glycol as a plasticizer, 90% ethyl alcohol as a preservative in the following ratio of components, mass - volume: chamomile - 35 g, cloves - 20 g, calendula - 35 g, miswak - 10 g, Arabic gum - 18 g, polyethylene glycol - 20 ml, Ethyl alcohol 90% - 1000 ml. Dental films are obtained as follows: 18 g of Arabic gum is poured into 60 ml of extract and left to swell for 30-45 minutes. Then heated in a water bath until a clear solution is obtained. To the resulting mass is added 20 ml of polyethylene glycol and mixed. The finished gel is an elastic-viscous, elastic, plastic, homogeneous fluid mass. Everything is mixed and poured into a plastic mold. Dry at a temperature of 22-28°C for 48 hours. Next, the resulting film mass is removed from the molds and

cut into squares 1 cm2 in size. The obtained dental films are homogeneous, strong, elastic, without breaks.

International Journal of Natural Medicine and Health Sciences
ISSN (Online):2790-2471 ISSN (Print): 2790-2463
September 2022
Journal homepage: https://journals.iub.edu.pk/index.php/ijnms

Assessment of population satisfaction with the compulsory medical insurance system

Hajiyeva Yaqut, Pashayev Yaqub.
Azerbaijan Medical University, Department of Public Health and Health Care Organization.

ABSTRACT

Introduction: We all know that compulsory medical insurance has been introduced in our republic. The introduction of compulsory medical insurance will not only ensure the accessibility of the population to medical services, but will also affect the equal distribution of medical services among the population. This, in turn, will lead to an increase in the medical activity of the population and, as a result, to a decrease in diseases. However, the conducted observations show that the level of awareness of the health insurance service of the population is different. This leads to incorrect use of health insurance services and, as a result, to a decrease in population satisfaction. This point of view - the results of our researches are reflected in the information we present. **Purpose:** Studying the population's use of the mandatory health insurance service, awareness of this service and evaluation of the level of satisfaction. **Materials and methods:** The research was conducted in a city polyclinic, a general education school, and a commercial facility in Baku city. A questionnaire was used. 2000 questionnaires were distributed, up to 40% were returned. 817 fully filled questionnaires were analyzed. **Results:** According to the results of the research, 147 people (18.0 + 1.3%) of the respondents use the service, 223 people (27.3 ± 1.6%) have little information about the service and consider it necessary to promote it, 248 people (30.4 ± 1, 6%) are completely unaware of the effectiveness of the service, while 199 people (24.4 ± 1.5%) do not consider it necessary to use this service. **Conclusion:** The level of satisfaction of the population with the mandatory health insurance service depends on their level of awareness. Respondents' lack of knowledge affects their level of satisfaction with this service. Therefore, it is necessary to conduct educational activities in this direction among the population.

International Journal of Natural Medicine and Health Sciences
ISSN (Online):2790-2471 ISSN (Print): 2790-2463
September 2022
Journal homepage: https://journals.iub.edu.pk/index.php/ijnms

Chemical compositions, antimicrobial activity and toxicity of *Datura innoxia* extracts

Adila Valiyeva, Eldar Garayev, Kamala Badalova, Ramiz Akhundov, Rana Jafarova, Nurana Mollayeva, Arzu Musayeva
Azerbaijan Medical University, Baku, Azerbaijan

ABSTRACT

Datura innoxia is an annual herb from *Solanaceae* family and naturally grows in Azerbaijan. *Datura* species are well-known sources of tropane alkaloids, especially scopolamine and atropine. Plants were traditionally used for treatment of asthma, rheumatism, pains, spasms, haemorrhoids, *etc.* In our study, we have determined alkaloids, triterpenoids, fatty acids, phytosterols, and essential oils of *D. innoxia* samples. Tropane, nortropane and pyrrolidine derivatives were determined with GC-MS and LC-MS methods. Scopolamine was determined in a major quantity in the alkaloidal mixtures of aerial parts and seeds extracts of *D. innoxia.* HPLC-DAD method was used in comparison with external standards of scopolamine and atropine. Fatty acids and sterols were analyzed in the seed oil by using GC-FID method. Polyunsaturated fatty acids, linoleic (58%) and oleic acids (26%) were the major fatty acids of seed oil. Three phytosterols - campesterol, stigmasterol and *β*-sitosterol were detected in the seed oil. Two triterpenoid isomers - ursolic and oleanolic acids and scopolamine were isolated from the ethanolic extract of seeds. Analytical TLC was used to differentiate of isolated compounds in comparison with their reference standards. The chemical structure of ursolic acid and scopolamine was confirmed with NMR spectroscopy. Essential oils of *D. innoxia* leaves, fruits and flowers were extracted by hydrodistillation and determined with GC-MS method. Terpenoids, volatile carbohydrogens, fatty acids, ketones, alcohols, organic acids, phenolics, esters, etc. were found in the essential oil samples of *D. innoxia.* Antimicrobial activity of ethanolic extracts of leaf, stem, fruit, seed, root and flower extracts were tested against *Candida albicans, Bacillus anthracoides, Bacillus cereus, Staphylococcus aureus, Escherichia coli, Pseudomonas aeruginosa, Klebsiella pneumonia, Listeria monocytogenes, Salmonella enterica* organisms. Leaf and stem extracts demonstrated significant activity against *S. aureus, B. cereus, B. anthracoides* and *L. monocytogenes*. Chronic toxicity of alkaloid mixture of *D. innoxia* seeds was examined on experimental rats for 30 following days, by ingesting a 5 mg/kg

dose of alkaloid mixture. In comparison with the control group, the enzymatic activity of liver, blood tests, weights of body and internal organs, the volume of urine, and the weight of faeces were measured. A little amount of liver toxicity, a few weight decreases and significant changes in the blood tests demonstrated some toxic properties of the alkaloid mixture. Behavioural changes were tested on laboratory mice, by peritoneal ingestion of 5, 15, 30 and 50 mg/kg of alkaloid mixture of *D. innoxia* seeds. Dosedepented changes were observed with “open field” and “dark/light box” tests.