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Randomised, double blind, cross-over, placebo and active controlled human pharmacodynamic study on the influence of silver fir wood extract (Belinal) on post-prandial glycemic response

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The aim of this study was to test the extract from silver fir wood (Belinal) on the reduction of the blood glucose concentrations after consumption of a standard meal. 31 healthy participants consumed 100 g of white bread 4 times (with 1 week washout period, consequently) concomitantly with a capsule of Belinal, capsule of chestnut wood extract, placebo or acarbose (active control). Glucose and insulin in the blood were measured before and after the meal. The area under the curve of glucose concentration in blood after the meal was 35% lower when Belinal was added compared with the placebo group (p=0.019). Acarbose lowered the area for 43% (p=0.002). By this, we proved that the effect of Belinal might be beneficial for prevention of diabetes. This is the first study that provides a scientific rationale for use of silver fir wood extract as food supplement for reduction of health risks connected to type 2 diabetes mellitus.

Biography

Mateja Sirše is a Doctor of Gynecology at University Medical Centre Maribor, Slovenia. Her research focus in blood collection, followed by a morning visit, which included reviews Patient after surgery and prescribing therapies.

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Activity of novel semisynthesized sesquiterpene lactones towards NF-B in a her2 breast cancer cell line

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The NF-B signalling pathway is constitutively activated in Cancer Stem Cells (CSCs) inducing the expression of genes that regulate proliferation, invasion, and metastasis. Plant-derived Sesquiterpene Lactones (SLs) have been suggested to inhibit this transcription factor. SLs are found in plants from the Asteraceae family and one species in this family, Ambrosia arborescens, contains a high concentration of damsin. We have previously shown that treatment with damsin reduces the CSC population of the HER2 breast cancer cell line JIMT-1. Damsin was used as a starting material for the synthesis of the SL analogue DCS3 followed by the synthesis of four DCS3 SL analogues. The toxicity of DCS3 and the analogues was investigated in the normal-like human breast epithelial cell line MCF-10A and in the JIMT-1 breast cancer cell line. Inhibitory concentration 50 (IC50) values were obtained from MTT-based dose response curves. Immunofluorescence microscopy was used to evaluate if the compounds inhibited TNF-induced translocation of NF-B to the cell nucleus. All compounds were more toxic to JIMT-1 cells than to MCF-10A cells as shown by lower IC50 values in the former cells. DCS3 was more toxic than damsin and the DCS3 SL analogues were more toxic than DCS3. At IC50, all compounds inhibited TNF-induced translocation of NF-B to the cell nucleus. The compounds reduce the CSC sub-population of JIMT-1 cells. Our results suggest that these compounds should be further investigated to find efficient CSC inhibiting compounds that may be used in the clinic.

Biography

Wendy Soria is a Doctoral student of Functional zoology at Lund University, Sweden. Her research focus in Anti-cancer stem cell activity of a sesquiterpene lactone isolated from Ambrosia arborescens and of a synthetic derivative.

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The inhibitory effect of licorice roots on IFN-γ-mediated microglia stimulation and the reactive mouse splenic T cell responses

Eun-Ju Yang and **Kyung-Sik Song**
Kyungpook National University, Republic of Korea

Multiple Sclerosis (MS) is an autoimmune neurodegenerative disorder in the Central Nervous System (CNS), and the immune responses induced by auto reactive T cells are the hallmark in the development of MS. The autoreactive T cells overproduce the pro-inflammatory cytokines, such as interferon-γ (IFN-γ) leading to the microglia stimulation via the CXCL10 (IP-10) chemokine production. The licorice roots (Glycyrrhizae Radix, GR) have been investigated for various biological activities, however, the suppressive effect of GR on IFN-γ-stimulated microglia BV2 and the reactive mouse splenic T cell responses have not been reported yet. In this study, the GR ethanolic extract and its partitions were treated to BV2 cells and mouse splenic T cells to determine the anti-inflammatory effects. Ten ng/mL IFN-γ significantly enhanced the nitric oxide and Tumor Necrosis Factor (TNF)-α productions in BV2 cells, however, it was effectively inhibited by not only GR extract but also the Dichloromethane (MC) and Ethyl Acetate (EA) fractions of GR. In addition, MC and EA fractions decreased the IP-10 production. On the other hand, when the mouse splenocytes were stimulated with anti-CD3 and anti-CD28 for 3 days, GR extract reduced the populations of IL-17A+IFN-γ+ and IL-17A-IFN-γ+ in CD4+ and CD8+ T cells. The IL-17A, IFN-γ, and IL-6 productions were decreased, as well. By MC and EA fractions, IL-17A+IFN-γ+CD4+, IL-17A-IFN-γ+CD4+, and IL-17A-IFN-γ+CD8+ T cell populations were effectively decreased, and the productions of IL-17A and IFN-γ were also suppressed. Especially, MC fraction significantly reduced the populations of Tbet+IFN-γ-, Tbet+IFN-γ+, and Tbet-IFN-γ+ in CD8+ cells, when the CD3+ T cells were polarized into TH1 and TC1 cells. The elevated IL-17A, IFN-γ, IL-6, TNF-α, and CXCL10 productions were also decreased. These data suggest that GR and its fractions could be useful for anti-inflammatory effect on microglia and T cells in the CNS autoimmune condition, especially MS.

Biography

Eun-Ju Yang is a professor at Kyungpook National University, Republic of Korea. He has his expertise in Natural Products and Medicinal Chemistry.

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A new 1,3-dihydroxy-2-methyl-11H-benzofuro[2,3-b]chromen-11-one isolated from *Abronia nana*, inhibits High mobility group box-1 (HMGB1)-induced septic responses

Kyung-Sik Song, Eun-Ju Yang, Doohyun Lee, Wonhwa Lee, Jong-Sup Bae and Taeho Lee
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Despite intensive investigation of molecular mechanisms underlying the pathogenesis of sepsis, many aspects of sepsis remain unresolved, which hamper the development of appropriate therapeutics. *Abronia nana* is an ornamental plant belonging to Nyctaginaceae, its pharmacological potential, especially against septic responses, has not been established well. In the present study, we isolated a rarely new compound 1,3-dihydroxy-2-methyl-11H-benzofuro[2,3-b]chromen-11-one (LDH1609) from *Abronia nana*. LDH1609 was investigated for its potential activities against HMGB1-mediated septic responses. The data showed that LDH1609 effectively inhibited the Lipopolysaccharide (LPS)-induced release of High Mobility Group Box-1 (HMGB1). The HMGB1-mediated septic responses were also significantly suppressed by LDH1609, including hyperpermeability, leukocyte adhesion and migration, and cell adhesion molecule expression. In addition, LDH1609 inhibited the HMGB1-mediated production of Tumor Necrosis Factor-α (TNF-α) and Interleukin (IL)-6, the activation of nuclear factor-κB (NF-κB), and Extracellular Signal-Regulated Kinase (ERK) 1 and ERK2. These results demonstrate that LDH1609 might be applied to develop the potential therapeutic agents for various severe vascular inflammatory diseases through the inhibition of the HMGB1 signaling pathway.

Biography

Kyung-Sik Song is a professor at Seoul National University, Republic of Korea. He has his expertise in Medicinal Chemistry. He has published more than 50 papers in peer reviewed international journals.

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Back pain and herniated disc linked to depression

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In recent years in many people, depression causes unexplained physical symptoms such as back pain or headaches. While many objective research studies have concluded that there is little or no correlation between herniated discs and painful symptoms. Psychosomatic herniated disc pain is a lesser considered but very common source of enduring chronic symptoms which are often mistakenly linked to a coincidental disc abnormality. In the case of a herniated disc, the structural condition exists, but is not responsible for any painful complaint. The pain is actually the result of mild ischemia of the surrounding nerve and muscle tissues. Even the lowest levels of oxygen deprivation will affect the neurological structures near the herniated disc. This will cause localized and radiating nerve pain, tingling, numbness or weakness. The evidences suggest that psychosomatic does not mean imaginary or not real. It simply designates actual physical symptoms which are caused by, worsened by or perpetuated by a psychoemotional process. In essence, these symptoms are just like truly anatomically-motivated pain in their expression, but are enacted through nonstructural processes and for nonstructural reasons. On the whole herniation is so typical in many areas of the spine; the symptoms are often mistakenly blamed on these innocent disc irregularities. Many researchers argue that psychosomatic pain exists due to unresolved emotional issues which are repressed in the subconscious mind. These thoughts, feelings and memories are directly responsible for causing physical pain and related bodily or psychological symptoms as part of the repression process. In essence, the mind will use the pain as a camouflage, concealer or smokescreen, to hide these emotionally charged repressed thoughts. Being that these emotional issues are repressed, you do not think about them or even know they are causing you such health troubles, since they exist under the surface of conscious thought, in the deepest recess of your subconscious mind. As we have seen no one is immune from suffering some degree of psychosomatic pain in life. However, medical science does not like the word psychosomatic, so you will often hear this topic being discussed as stress-related pain instead. In fact most support the idea that even painful bulging disc should be treated conservatively and non-surgically. The stress-related back pain diagnosis is a psychosomatic or psychophysiological one. A psycho-physiological illness is any illness in which physical symptoms are thought to be the direct result of psychological or emotional factors. In the final analysis oxygen deprivation, also known as ischemia back pain is the anatomical process used as the enforcer of the subconscious mind's desires. Simple ischemia can be enacted easily through the autonomic system and can be directed at any of the body's locations or systems.

Biography

Zahra Daghighpoor completed her High School Diploma in Natural Sciences from 1996 to 1997; Associate degree program in the field of Nurse Anesthetist at Iran University of Medical Sciences (1998-2000) and BA in the field of Nurse Anesthetist at Azad University of Medical Sciences (2010-2012).

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Need for orphan drug provisions in India

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An orphan drug is a pharmaceutical agent that has been developed specifically to treat a rare medical condition. India currently has no regulations for orphan drug manufacturing or selling. It is estimated that 72,611,605 people are affected by rare diseases in India (2011). About 6000 to 8000 rare diseases, mostly genetic in nature have been identified. Recent news about orphan diseases in India was tracked and the data was compiled. No specific primary medication is available for orphan disease in India. However, secondary medications are being used for preventive treatment of these diseases. A group of pharmacologists requested the Indian government to enact the Orphan Drug Act in India at a conference held by the Indian Drug Manufacturers Association in 2001. However, this was a dead end as no such provisions have been initiated by the government till date. It is necessary on the part of the Indian government and regulatory bodies to implement such provisions and bring about a whirlwind of change by enacting provisions related to orphan drugs.

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Review and evaluation of regulatory process in not of standard quality drugs in India in comparison with Europe and USA

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Not of standard quality drugs may end up in the status of not meeting the compendial requirements or standards as prescribed. India has pharmaceutical regulatory policy to handle such cases. There is a need to compare with the regulation procedure of FDA's of countries like USA, Australia, Singapore, European Union and other countries, is of vital importance, for incorporation of better regulatory procedures, if any, into our system. This process will help India to come up with various newer innovated processes followed in the western world to adopt. This in turn will help the country to carve a better draft policy to counter the not of standards medicine and pharmaceuticals. The Drugs and Cosmetic Act 1940 and rules 1945 has provision to deal with such kind of issues, however there is a need to design newer methodology and process to identify, regulate, enforce not of standard quality pharmaceutical products. The Indian pharmaceuticals market is the third largest in terms of volume and thirteenth largest in terms of value, as per a report by equity master. India is the largest provider of generic drugs globally with the Indian generics accounting for 20% of global exports in terms of volume. Of late, consolidation has become an important characteristic of the Indian pharmaceutical market as the industry is highly fragmented. With 70% of market share (in terms of revenues), generic drugs form the largest segment of the Indian pharmaceutical sector. India supply 20% of global generic medicines market exports in terms of volume, making the country the largest provider of generic medicines globally and expected to expand even further in coming years. Over the Counter (OTC) medicines and patented drugs constitute 21% and 9%, respectively, of total market revenues of US$ 20 billion. The major challenges of these regulatory agencies and organizations around the world are to ensure the safety, quality and efficacy of medicines and medical devices, harmonization of legal procedures related to drug development, monitoring and ensuring compliance with statutory obligations. They also play a vital role to ensure and increase regulatory implementation in non-regulated parts of the world for safety of people residing there. The present study describes a brief review of various regulatory bodies of major developed and developing countries and the scope and challenges of such regulatory organizations in drug development and delivery of safe and effective healthcare products to individuals around the world.

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Consistency of the drug-target proteins profile in human tumor tissues and cell lines of colorectal carcinoma based on the human protein database

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Molecularly targeted therapy is the main direction of anti-tumor care. Cell line is wildly used in the preclinical researches of molecularly target drug. While, the consistency of drug-target proteins profile between the human tumor tissues and human tumor cell lines is remained uncertain. In our study, we compared the expression level of drug-target proteins in patients' colorectal carcinoma tissue with Caco-2 cell line from human protein database to clarify the consistency. The protein expression levels of FDA-approved target-proteins involving in both colorectal carcinoma patients and cell lines were scored base on the intension and quantity of immunohistochemical stain from the database of Human Protein Atlas. The protein expression between individual and cell line was compared. Then the consistency profiles of total proteins between individual and cell line were evaluated. Ultimately, proteins with well or poor consistent expression were identified analyzed by Gene ontology and KEGG enrichment. The expression levels of 176 target proteins involving in both Caco-2 cell line and colorectal carcinoma patients (n=104) were obtained and analyzed. Almost 57.4% of proteins in individual patients were consistent to cell line, which was independent from individual characteristics, such as age, gender and tumor location. About 40% and 47% of total protein, included 47 and 36 proteins with entirely consistent and inconsistent profile, were well and poor consistent expression between patients and cell line, respectively. Those inconsistent proteins were enriched in the pathways related to various types of cancer, immune, extracellular matrix receptor interactions and cytoskeleton. There was a significant difference in the target protein expression between Caco-2 cell line and colorectal tissue, the results suggest that the consistency was important to investigate cell as the model in drug preclinical development.

Biography

Zhang Yi-Wen has her expertise in Pharmacogenetics on the *in vivo* process of chemotherapy drugs and endogenous substances, quantitative pharmacology research based on population pharmacokinetics. She participated in the construction of important new drug discovery platform of high throughput screening and evaluation of drug metabolism *in vitro* in cellular and molecular level and response to the several study of Phase I clinical trial. Now, she serves as youth committee member of chemotherapy pharmacological professional committee of Chinese pharmacological society and the precision medical branch of provincial translational medicine institute. She has undertaken four research projects, including national natural science foundation for young.

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Polydatin displays antitumour activity against murine melanoma *in vitro* and *in vivo*

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Stilbene compounds are a family of phytoalexins, synthesized by different plants where they are induced by stress conditions such as infection, trauma and UV-irradiation. Among stilbenes, Resveratrol, (3,5,4´-trihydroxystilbene RES), and its glucoside Polydatin (3,5,4'-trihydroxystilbene 3-O-beta-D-glucopyranosid POLY), have increasingly gained scientific interest. POLY is structurally related to RES in which the oxidrilic residue is substituted by a glycoside group. This substitution induces changes in the biological properties. RES is susceptible to oxidative degradation while POLY, a precursor of RES is more resistant to enzymatic oxidation, POLY is highly soluble in water, enter the cells by active transport and is more readily absorbed by the intestine. RES and POLY, show many antitumor properties including apoptosis induction and inhibitory effects on cancer cell proliferation, angiogenesis, metastasis, and inflammation. In addition, they can modulate immune system response and protect normal cells against free radicals damage. Melanoma is the most common cutaneous malignancy in Caucasian population whose frequency is increasing at an alarming rate. In previous studies, we have demonstrated that RES inhibits the proliferation of human melanoma, also resistant to Temozolomide, and we have suggested that the mechanism by which RES exerts its antitumor activity in melanoma cells correlates with apoptosis induction, reduction of telomerase activity and hTERT gene transcript levels. Objective of the present study is to investigate the antitumour activity of POLY *in vitro* and *in vivo* on a murine syngenic model of melanoma. We tested *in vitro* the antiproliferative effects of POLY on tumour growth and compared its effectiveness with the activity of RES on B16 melanoma cell line. In addition, cell cycle progression, induction of apoptosis and telomerase inhibition were also investigated. We found that POLY, like RES, can inhibit cancer cell proliferation in B16 melanoma in a time- and concentration-dependent fashion, and that the POLY at lower concentrations resulted to be more effective than RES. *In vivo* experiments were performed in a syngenic murine model in which male C57BL/6J were injected with B16 melanoma cells with different treatment schedules to assess the chemopreventive and/or therapeutic activity of POLY. The results show a significant reduction of tumor mass, measured during POLY treatments and a significant survival increase in mice treated with POLY pre and post-tumor implantation. Though preliminary these results suggest that POLY, for its clinical potential, both in terms of disease prevention and treatment, could be considered a good candidate in melanoma management.

Biography

Maria Pia Fuggetta is a professor of Pharmacology at Institute of Translational Pharmacology, Italy. She is expertise in a laboratory test based on determination of cytokine profiles: a promising assay to identify exposition to contact allergens and predict the clinical outcome in occupational allergic contact dermatitis.

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Analysis of genetic diversity of Indian melon (*Cucumis melo L.*) land races and its comparison with global reference melon populations

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[3]Central Institute of Temperate Horticulture, India

The present investigation entitled, "Analysis of genetic diversity of Indian melon (*Cucumis melo L.)* land races and its comparison with global reference melon populations" was conducted at Department of Vegetable Science and School of Agricultural Biotechnology, Punjab Agricultural University Ludhiana. Eighty-eight melon accessions collected from Uttrakhand and Uttar Pradesh states of India representing four agro-ecological regions (six sub-regions) and eight reference accessions from USA were characterized and evaluated for nineteen morphological traits of plant and fruit, biochemical traits such as T S S, ascorbic acid content, titrable acidity and dry matter content, SSR genotyping and reaction to diseases. Significant differences were noted among all the accessions for all the characters observed. Phenotypic and genotypic coefficients of variation were found to be high for fruit weight and node at which first hermaphrodite flower appears. High heritability alongwith high genetic advance was recorded for fruit weight, node at which first hermaphrodite flower appears, fruit length, seed cavity length, number of primary branches per vine and total soluble solids content. D2 analysis grouped the accessions into ten clusters. The reference accessions obtained from USA and land races collected from different agro-ecological zones of India were found to be scattered in different clusters. No parallelism was found between genetic and geographic diversity. DNA polymorphism was utilized to cluster the genotypes into different clusters based on similarity as well as dissimilarity coefficients. On basis of SSR analysis, dendrogram clustered 96 accessions into three major groups. There was a significant correlation between botanical groups and the clustering pattern. Accessions belonging to cantalupensis cluster together in cluster I, accessions of reticulatus group cluster together in cluster II and momordica group cluster together in cluster III. However, some accessions of cantalupensis and reticulatus were intermixed in cluster I and II. Reference accessions cluster together forming a genetically unique assemblage in sub-group IIA and shared similarity coefficient of 0.65 with sub-group IIB. This suggested that reference accessions shared genetic affinities with Indian melon accessions that could not have been predicted based on their geographic origin. Four accessions were free from CMV and two accessions exhibited immune reaction to downy mildew. The results inferred that these melon accessions could be used to broaden the genetic base of melon.

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Isolation of male sterile and maintainer lines from North Indian onion (*Allium cepa* L.) populations with the aid of PCR based molecular marker

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Marker Assisted Selection (MAS) using mitochondrial DNA based marker cytochrome b (*cob*) was integrated with phenotypic evaluation to isolate male sterile and maintainer lines from open pollinated onion varieties adapted to North Indian agro-climatic region. Cytotype (N/S) determination by *cob* marker followed by morphological and microscopic study of pollen discovered male sterile plants (S*msms*) at frequencies of 0.015 in Punjab Naroya, 0.020 in Punjab Selection, and 0.006 in Punjab White. The progeny scoring of test-crosses between male sterile and N-cytoplasmic plants isolated the maintainers (N*msms*) at frequencies of 0.133 in Punjab Naroya, 0.231 in Punjab Selection and 0.182 in Punjab White. As a novel approach, Trait Recovery Programme was demonstrated to reduce the population size required to recover a male sterile plant by 91.08% in Punjab Naroya, 92.99% in Punjab Selection and 97.66% in Punjab White. For recovering a maintainer, 10% reduction in Punjab Naroya and 9.10% in Punjab Selection was calculated. However, no reduction was observed in Punjab White. This analysis also validated that in a randomly mating onion population, frequency of recessive ms allele squared is equal to the frequency of male sterile plants among S-cytotype and frequency of maintainers among N-cytotype (fms2 = fS*msms*/fS = fN*msms*/fN).

Biography

Geetika Malik is currently working as an Scientist and Assistant Professor in the division of vegetable science at Sher-e-Kashmir University of Agricultural Sciences and Technology of Kashmir, India. She is expertise in Natural Products and Horticulture.

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Optimization and validation of a fluorescent kinetic analysis for the measurement of enzymatic activity of plasma DPP4

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In the course of a clinical study developing evoglipitin (DA-1229) tartrate, a specific dipeptidyl peptidase 4 (DPP4) inhibitor for the treatment of type 2 diabetes, an analytical method of fluorescent kinetic assay was optimized and verified to determine an enzymatic activity of soluble DPP4 in human plasma using a spectrofluorometer. The validation was performed for the parameters including the accuracy, the precision, the Limit of Detection (LOD), the linearity, the dynamic range, the short/long-term stability, the freezing-thawing stability, the Km constant, the dilution effect, and the recovery efficiency. The plasma DPP4 enzymatic activity (mU/min) was measured as the Initial Velocity (VO) of enzymatic reaction over time. After the reaction, the deviation of the mean from the nominal value, the Coefficient of Variation (CV) within/between runs, and the relative determinant constant (R2) were calculated. Accuracy and precision were within the deviation of the mean ≤15%, CV ≤15%, R2>0.99 except for LOD, where it did not exceed the deviation of the mean ≤20%, CV ≤15%, R2>0.95, respectively. The linearity of VO and the dynamic range of DPP4 values were reliable in the range of 6.06x103–5.13 x 105 mU/min and 62.5-1,500 ng/mL, respectively. Plasma DPP4 was stable under the various temperatures and even after three cycles of the freezing-thawing. The Km constant of plasma DPP4 was similar to that of the recombinant DPP4. Evoglipitin (DA-1229) tartrate effectively inhibited the DPP4 enzymatic activity in a dose-dependent manner without the dilution effect of sample. Due to the limited recovery efficiency of DPP4 in sample larger than 10 uL, the volume of sample was determined to be 10 uL for reliable assays. The optimized and validated analysis method of the DPP4 activity was successfully set up and employed for the measurement of the DPP4 activity in human plasma.

Biography

Hyunyee Yoon has expertise in developing the bio-analytic methods in the field of clinical studies. She has been operating the protein immunology core facility to support a number of clinical researchers at Seoul National University Hospital and Biomedical Research Institute since 1999. The major assays that she has worked on include protein quantification by an ELISA and a fluorescent multiplex bead array, protein qualification by a western blot and a Simple Western™ assays, enzymatic kinetic assay using a multi-detection analyzer, and immunogenicity analysis using a Meso Scale Discovery immunoassay. She has accumulated in-depth knowledge and experiences on various assays that are essential for the development and validation of the pharmacokinetic and pharmacodynamics analysis of clinical researches. Her continuous effort to resolve the complicated study derives the precise and reliable results.

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Therapeutic effects of crude and degummed *Citrullus lanatus* seed oil on candidiasis in immunosuppressed rats

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Vegetable oil has become an integral part of our diet, but relatively little is known about their antifungal potential. The present work was designed to evaluate the therapeutic efficacy of crude and degummed *Citrullus lanatus* (Watermelon) seed oil (CLSO) in the treatment of experimental oral candidiasis induced by *Candida albicans* in immunosuppressed rats. This anticandidal activity was analyzed by microbiological and histopathological techniques at days 7 and 14; it was compared with that of fluconazole, which was used as a positive control. Microbiologically, CLSO significantly ($p<0.05$) reduced the number of Colony Forming Units (CFU) sampled from the kidney tissue of rats treated for fourteen consecutive days, compared to group 3 (untreated control) rats. Treatment with fluconazole gave similar results at day 7 but exacerbated at day 14. Histologically, group 3 showed multifocal aggregation and widespread distribution of fungal blastospores (arrow) appearing singly or in small clusters within the renal parenchyma. While minimal fungal blastospores present in the renal parenchyma; fungal blastospores appearing singly within the glomeruli and renal tubules was seen in CLSO-treated animals, but minimal blastospore was less in degummed CLSO than in crude CLSO. Thus, the histological data were confirmed by the microbiological tests for crude and degummed CLSO, but not for the fluconazole-treated group which showed multifocal and widespread distribution of blastospores at day 14. Therefore, CLSO could be considered as an antifungal agent with degummed CLSO being more potent and could be proposed as therapeutic agents for oral candidiasis.

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Urtica dioica distillate (*Aragh Gazaneh*) restores altered glucose metabolism in diabetic rats

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Background: Urtica dioica (UD) is well known as a hypoglycemic plant. While the anti-diabetic properties of its extract is well studied, there are not any published reports regarding its distillate, a drink widely being used in different areas of Iran according to Traditional Iranian Medicine for treating diabetic patients.

Materials and methods: To justify the use of UD distillate (UDD) for treatment of diabetes, a series of experiments were performed on 24 male rats. The groups consisted of two treatment and two control groups, each one containing normal and diabetic rats. During 4 weeks, the rats in the treatment and control groups received UDD and water by gavage, respectively. Every nine days, the rats were weighted and their fasting blood glucose (FBS) values were measured. Following 4 weeks of treatment, all the rats were sacrificed for further experiments. FBS, serum insulin levels and the specific activity of hepatic enzymes including glucokinase, hexokinase and glucose 6-phosphate dehydrogenase were measured using standard methods.

Results and discussion: The amount of insulin secretion and also the specific activities of hepatic enzymes were significantly increased in the treated diabetic group. A significant decrease was also observed in the blood glucose of the treated diabetic rats compared to the diabetic control ones. UDD consumption by diabetic treated rats not only prevented weight loss but also caused a dramatic weight gain. Therefore, these results suggested that UDD administration could improve diabetic conditions by enhancing insulin secretion and liver glucose metabolizing enzymes' activity and could be used as an anti-diabetic drink as well.

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Effects of ethanolic extract of *Rauvolfia vomitoria* (*Apocynaceae*) stem bark on sexual behavior and reproductive function in normal male rats

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Objective: This study was aimed to investigate the effect of ethanolic extract of *Rauvolfia vomitoria* stem bark on sexual behavior and male reproductive function in normal rats.

Methods: 25 healthy sexually experienced Albino male rats of 3-4 months, weighing between 190 and 220 g were randomly divided into five groups (A–E) of five rats each and orally treated once daily for 22 days. Group A (control) received 5 mL/kg body weight of distilled water, groups B, C and D received 50, 100 and 200 mg/kg BW of *Rauvolfia vomitoria* extract respectively, while group E received 5 mg/kg BW of sildenafil citrate (standard). Sexual behavior parameters including mount frequency (MF), intromission frequency (IF), ejaculation frequency (IF), mount latency (ML), intromission latency (IL), ejaculation latency (EL) and post-ejaculatory interval (PEI) were recorded in male rats one hour after treatment by mating with a receptive female (1:1) at day 0, 1, 8, 15 and 22. At the end of treatment, body and organ weights, histological analysis and sperm parameters were also evaluated.

Results: The treatment with *Rauvolfia vomitoria* extract improves sexual behavior through significant reduction of ML, IL and PEI ($p<0.01$) and significant increase of EL, IF and EF ($p<0.01$) as compared to control. The extract also significantly increased daily sperm production rate (DSP) and epididymal sperm counts ($p<0.001$) as well as sperm transit ($p<0.05$) compared to control. Testis histology showed that the extract increased the concentration of all germ cell types, Leydig cells and Sertoli cells as compared to control.

Conclusion: Present findings provide experimental evidence that the ethanolic extract of *Rauvolfia vomitoria* enhances male sexual activity and production function in rats.

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Fiber based drug delivery system concepts and engineering

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The role of structure in drug delivery system engineering has become more diverse over the few decades or so. In recent times, there has been an interest in not-particulate systems for the development of drug delivery systems, which has arisen from the need to improve physical and chemical interaction properties with the host environment. To this end, there has been a significant increase in the deployment and engineering of fiber based systems as potential drug delivery carriers. Several methods have been explored and electrospinning technology, a method to engineer such structures, has gained much popularity over the last decade. This talk will focus on the electrospinning technique which belongs to the Electrohydrodynamic (EHDA) family of processes. Fundamental principles will be discussed and key developments in the area will be shown. Furthermore, concepts relating to compartmentalization and upscale will be presented. Finally, examples of ongoing developments between industry and academia will be highlighted, showing collaboration between industry and academia.

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Determination of some technological characteristics of local popcorn genotypes in the black sea region of turkey

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Maize is one of the important cereals grown in the world. Popcorn (Zea Mays Everta Sturt.) industry has been increasing continuously throughout the world. Development of microwave technology for popping corn has increased popcorn production.Although corn (*Zea mays L.*) is principally cultivated for carbohydrate production, in the past several years, it has gained great significance as a source of vegetable oil for the food industry. Corn kernel oil is mainly used for salad and cooking oil and for the production of table margarin. Its fatty acid composition comprises 40-68% of linoleic acid, 20-32% of oleic acid, and 8-14% saturated fatty acids, mainly palmitic acid.Determination for Fatty Acid Composition; The fatty acid composition of seed oils was determined by Gas-Liquid Chromatography (GLC) of fatty acid methyl esters after Thies. About 20 íL of extracted oil were transmethylated for 20 min at 20 °C with 1 mL of a 0.5 M solution of sodium methylate in methanol. Then, 0.5 mL of isooctane and 0.2 mL of 5% (wt/v) of NaHSO4 in water were added in that order. The samples were centrifuged, and 2.5 íL of the upper phase was injected into the gas chromatograph at a split ratio of 1:70. Analyses were performed on a Perkin-Elmer gas chromatograph. In this Study, 48 popcorn genotypes were used. 10 technological characteristics of 48 local popcorn genotypes were examined. Local popcorn genotypes were collected from 10 cities in the Black Sea Region of Turkey. Variance analysis showed that there were high variations in most of the technological characteristics.Crude fiber content, dry matter content, oil ratio, protein ratio, starch ratio, palmitic acid ratio, stearik acid ratio, oleic acid ratio, linoleic acid ratio and linoleic acid ratio between 1.51-3.59%, 87.20-89.99%, 2.22-5.95%, 10.69-16.42%, 63.00-73.64%, 9.61-15.93%, 1.25-3.62%, 24.43-42.14%, 40.39-59.53% and 0.0005-1.21% respectively. It was concluded that local popcorn genotypes collected from the Black Sea Region could form a rich genetic base in improvement programmes.

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Ornithogalum species consumed as medicinal plant

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Turkey is the gene center of many plant species. There are some documents about studies on the preservation, sustainability and evaluation of plants found in natural flora. The most of plants are collected uncontrollably from nature. They consume fresh, dried or different methods. Some of them are Ornithogalum species known as Turkish name "Çiğdem, Tükrükotu, Sakarcan". Ornithogalum, a member of the family Hyacinthaceae, contains around 150 species. Geofit is a plant. There are 44 species in Turkey, 17 of which are endemic. It grows with onions and seeds. The plant grow up well in barnyard area, not process soil and hazelnut fields. White flowering bulbs are collected from the mid of February until the end of April from nature. These onions can be consumed as fresh, boiled, roasted, pickled and preserves. The onions contain saponin. It is used as digestive system activator, constipation reliever, diabet and cholesterol control. The gathering of the plant with its bulbs in the flowering period prevents both the onions and the seeds from being transferred to the next generation. This situation will be caused to disappear of ornithogalum species from nature. In this research, the growing areas of Ornithogalum species collected from nature in Turkey, consumption forms as medicinal plant or vegetables and their consumption purposes were mentioned. In addition, with the survey conducted, lost amount by collecting from the nature was determined during the last 10 years .

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Effect of ethyl acetate leaf fraction of *Gongronema Latifolium* on alloxan induced diabetes rats

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Diabetes mellitus is a metabolic disorder caused by insufficient or absent production of the hormone insulin by the pancreas. The effect of ethyl acetate fraction of *Gongronema latifolium* on body weight, blood glucose level and lipid profile was evaluated in alloxan-induced diabetic rats using standard methods. The result revealed that there is a significant increase in body weight of Groups 2(15.17%), Group 3(12.05%) and group 4(14.05%) after 14 days treatment when compared with untreated diabetic rats (-5.61%). The effect of treatments on blood glucose level of alloxan-induced diabetic rats shows a significant increase ($P<0.05$) of percentage change of blood glucose in group 2(43.05%), 3(23.50%) and 4(43.36%) when compared with group 1(8.87%) and also a significant increase ($P<0.05$) in groups 2 and 4 when compared to group3 on the 14th day of treatment. The results of the determined serum lipid profile indicates a significant decrease ($P<0.05$) in the levels of serum TC, TG, LDL-C and VLDL-C and a significant increase ($P<0.05$) in the level of serum HDL-C of group 2(TC=3.01 ± 0.12mg/dl, TG=2.31 ±0.14mg/dl, LDL-C=0.83 ± 0.28mg/dl, VLDL-C=0.46 ± 0.34mg/dl and HDL-C=1.72 ± 0.29mg/dl), Group 3(TC=4.56 ± 0.96mg/dl, TG=2.52 ± 0.24mg/dl, LDL-C, 1.13 ± 0.09mg/dl VLDL-C=0.95 ± 0.16mg/dl and HDL-C=1.27 ± 0.10mg/dl) and Group 4(TC=3.56 ± 0.64mg/dl, TG=2.36 ± 0.16, LDL-C=0.09 ± 0.14mg/dl, VLDL-C=0.67 ± 0.32mg/dl and HDL-C=1.47 ± 0.15mg/dl) when compared with the group 1(TC=9.92 ± 1.02mg/dl, TG=3.18 ± 0.26mg/dl, LDL-C=7.74 ± 1.86mg/dl, VLDL-C=1.11 ± 0.12mg/dl and HDL-C=1.08 ± 0.11mg/dl,). Consequently, treatment with the fractions and standard drug reverse the alloxan effect. This study thereby indicates that ethyl acetate leaf fraction of Gongronema latifolium may exert a hypoglycemic effect and could improve the lipid profile concentrations in diabetic rats.

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Cynarin inhibits melanogenesis through ERK signaling pathway on α-MSH-induced melanin biosynthesis

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Cynarin is composed of plant such as artichoke, sunflower seed and burdock. These materials have compound such as chlorogenic acid (Caffeoylquinic Acid), caffeic acid, cynarin (Dicaffeoylquinic Acid), quercitrin (Quercetin Rhamnoside), arctiin, quercetin, luteolin. They provide special bio-physiological effect: chlorogenic acid, caffeic acid, quercitrin and luteolin as anti-melanogenesis factor; arctiin as inflammatory regulator (MAPK related factor) or protector from UVB-induced stress and so on. However, it has not been reported yet for melanogenesis biosynthesis of cynarin as component of these plants. Therefore, we also investigated melanogenesis of cynarin via signaling pathway. Melanogenesis-related protein as MITF, tyrosinase were decreased by cynarin via ERK signaling pathway in α-MSH-induced human melanoma cells (MNT-1). Cynarin has also represented inhibition of melanin content and intracellular tyrosinase activity. Cynarin is being provided at anti-melanogenesis or anti-pigmentation factors because of its investigated anti-melanogenesis mechanism in α-MSH-induced human melanoma cell and are well worth enough.

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Cost-utility analysis of combination therapy of type 2 diabetes mellitus in Ukraine

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Background: Type 2 diabetes mellitus (T2DM) is a serious medical and social problem. T2DM has a severe and progressive course, complications, metabolic disorders and high disability, which significantly reduce the quality of life of patients.

Objectives: To evaluate the cost-utility of the therapy regimes with Metformin+Glibenclamide compared with Metformin+Glimepiride and Metformin+Gliclazide.

Methods: The decision tree model was used to estimate the incremental costs and quality-adjusted life expectancy in patients with T2DM by health economics methods. 150 questionnaires to determine the quality of life of patients with T2DM were used. These patients were treated in the endocrinology clinics of Podolsky region of Ukraine in 2011-2013. The quality of life of patients was determined by visual analogue scale adapted European questionnaire of quality of life EuroQol-5D. The patients were examined on the following parameters: age, duration of T2DM, body mass index, the average fasting plasma glucose, cost-utility ratios. It has been found that patients with Metformin+Glibenclamide regime were significantly older, with the largest T2DM duration, with the highest body mass index and highest levels of fasting plasma glucose, cheapest cost-utility ratio. In comparing patients with Metformin+Gliclazide and Metformin+Glimepiride regimes it was found no other significant differences ($p>0.05$). Calculations take into account the direct costs only. Treatment costs were estimated on the basis of average wholesale government drug price list as at 12.06.2014. To determine the stability of results sensitivity analysis was performed.

Results: The decision tree model predicted that Metformin+Glibenclamide therapy regime has cheapest cost-utility ratio; when compared Metformin+Glibenclamide therapy regime with Metformin+Glimepiride an incremental cost-utility ratio was 60 UAH and while gaining 0.11±0.04 quality-adjusted life-years (QALYs). Compared Metformin+Glibenclamide therapy regime with Metformin+Gliclazide an incremental cost-utility ratio was 318 UAH and while gaining 0.14±0.01QALYs.

Conclusions: Scheme of combined therapy Metformin+Glibenclamide has cost-utility advantages in comparison with other combined schemes of T2DM.

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Coronary flow regulation by adenosine it's signaling

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Adenosine acts through its receptors (A1, A2A, A2B, and A3) via G-proteins and causes an increase in Coronary Flow (CF) mostly through A2A AR. However, the role of other ARs in the modulation of CF is not well understood. Using KOs, we investigated the role for each AR in the regulation of CF. Using the isolated heart from A3 KO mice; we reported an increase in A2A-mediated CF. Similarly, we found an increase in CF in A1 KO mice with A2A agonist (CGS-21680). Also, in A2A KO mice, response to CGS was abolished. On the other hand, A2A KO mice showed a decrease in CF to NECA (non-selective agonist). BAY60-6583 (A2B selective agonist) was without an effect on CF in A2B KO mice; however, it increased CF significantly in A2A KO. CGS also caused a significant increase in CF in A2B KO mice. Also, exogenous adenosine-induced increase in CF in WT, A2A KO, and A2B KO mice were significantly reduced with catalase. BAY-induced increase in CF in WT was significantly inhibited with glibenclamide. Overall, our data support stimulatory roles for A2A and A2B and inhibitory roles for A1 and A3 in the regulation of CF; these observations provide new evidence for the presence of all four ARs in CF regulation. We propose, that activation of A2A/B may release H2O2 which then activates KATP channels, leading to vasodilation. These studies may lead to better understanding of the role of ARs in coronary disease and may lead to better therapeutic approaches.

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Estimations of contents of iron oxides using geostatistical methods in two hillslope curvatures of an Alfisol under sugarcane

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The spatial characterization of Fe oxides (hematite and goethite content) has usually been made by Ordinary Kriging (OK) considering the variogram parameters. However, OK softens local details of the spatial variation, overestimating small values and underestimating high ones. Thus, Trans-Gaussian Kriging (TGK) becomes an alternative to have a robust estimation of the variogram, reducing outlier effects. The objective of this study was to evaluate OK and TGK algorithm performances in estimating and mapping goethite and hematite iron oxides in two hillslope curvatures on an Alfisol in Catanduva, Sao Paulo State, Brazil. Two sampling areas were selected, one concave landscape and another convex landscape. Then, over each area, a 1-ha sample grid with regular spacing of 10 x10 m, totaling 121 sample points of soil per area, was selected. The mineralogical analysis was performed in each sample to determine hematite and goethite contents. Moreover, to meet TGK criteria, data were previously converted to standard normal transformation, whereas OK data were not transformed. The TGK estimates presented improved accuracy mapping from 0.84 to 11.1% for the Gt and from 8.23 to 0.76% for the Hm content in concave and convex hillslope curvature, respectively. In general, the TGK estimates reproduced the best results. Moreover, the conditional cumulative distribution function and experimental variogram were better reproduced by TGK estimates than OK. The TGK is recommended for estimation of a more stable robust variogram in Fe oxide mapping with strong variability, when higher efficiency and accuracy are required. Hillslope curvatures influenced the interpolation efficiency and accuracy of interpolation. Relief classification is as much important as the variogram modeling for a greater efficiency and it would improve digital modeling of Fe oxides. The OK maps for Fe oxides should be cautiously used due to its uncertainty, especially in different hillslope curvatures mappings.

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Design, development and evaluation of topical liposomes of benzoyl peroxide and herbal drug resveratrol for treatment of acne

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Liposomal formulations have been successfully used in the treatment of a number of dermatological diseases including acne. Benzoyl peroxide is a potent antibacterial used commonly for the treatment of acne either alone or in combination. But it suffers from side effects like skin redness, irritation, itching, and oedema. In this present study benzoyl peroxide alongwith a herbal drug Resveratrol was encapsulated into liposomes, for topical applications .Pre Formulation and compatibility studies of both drugs by UV and FT-IR , DSC and XRD indicated no incompatibility between both drugs and excipients . .Liposomes were prepared by thin film hydration technique using phospholipid, cholesterol and drugs in different ratios. Concentration of phospholipid , cholesterol and Hydroxy Propyl- β-Cyclodextrin was optimized by Experimental response surface design (Box Behnken Design (BBD)). These formulations were prepared and evaluated for the Entrapment Efficiency (EE%) of benzoyl peroxide and resveratrol. The optimized liposomal formulations was further evaluated for particle size , zeta potentia , FT -IR, XRD and TEM . The particle particle size with PDI value less than 0.3 indicated uniform particle size distribution , –ve zeta potential indicated Brownian motion stability between the particles and TEM showed the presence of outer coating of bilipid layer entrapping the drugs with an optimum size in the range of 150-350 nm .Liposomal suspension was lyophilized to make it more stable.

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Antihypertensive activity and standardization of the bioactive fraction of hyphaenethebaica growing in Egypt

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Background: Hyphaene thebaica herb is well known in Egypt for its antihypertensive activity. However a standardized herbal extract of Hyphaene thebaica has never been prepared in a pharmaceutical dosage form.

Methods: A biologically guided fractionation was carried out *in-vitro* for the 50% and 70% ethanol extracts of Hyphaene thebaica herb using the Angiotensin Coverting Enzyme (ACE) inhibition assay and renin inhibition assay. A validated reversed phase HPLC method was developed for the standardization of the active fractions.

Results: The ethyl acetate fraction of the 70% ethanol extract contained higher percentages of the three compounds chlorogenic acid, quercetin and apigenin (1.940%, 2.994% and 0.612%, respectively) relative to the ethyl acetate fraction of the 50% ethanol extract (1.384%, 0.342% and 0.070%, respectively). Also by comparing all fractions, the butanol fraction of the 70% ethanol extract showed the highest ACE inhibition activity (IC50= 0.001436) and the highest renin inhibition activity (%inhibition= 93.69% at concentration 0.5 mg/ml). A standard calibration curve for the three compounds was established at a concentration range of 0.1-50 µg/ml and it showed good linearity with a correlation coefficient (R2) of (1, 1 and 0.999, respectively). A high degree of precision (relative standard deviation values <5%) was achieved. The limits of detection for the three compounds were 0.428, 0.368 and 0.849 respectively. While the limits of quantification for the three compounds were 1.29, 1.11 and 2.57 respectively.

Conclusion: Current results showed that the butanol fraction of the 70% ethanol extract revealed the highest antihypertensive activity through an ACE inhibition mechanism and renin inhibition mechanism. In addition, recorded observations concerning linearity of the used bioactive markers offer a support for the possible utility of the tested extracts as potent standardized antihypertensive drugs.

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A survey on medicinal plants used by traditional healers in Harari regional State, Eastern Ethiopia

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This study was carried out to collect and document indigenous knowledge on medicinal plants in Harari regional state, East Ethiopia. The ethnobotanical data were collected from 24 traditional healers (14 male and 10 female) using semi-structured questionnaire, observation and guided field walks. The survey identified 54 medicinal plants distributed into34 families and 50 genera. The fabaceae family was the most dominant plant family recorded as sources of traditional medicines. The study revealed that 42 species (78%) were used against human ailments, 4 species (7%) were used to treat health problems of livestock and 8(15%) species were used to treat both human and livestock ailments. The plant parts most frequently used were the Leaf (48%), followed by root (24%), stem (11%), fruit (9) and whole parts (7). Traditional remedies were processed mainly through crushing, followed by squeezing. Oral applications were widely used, followed, in frequency of prescription, by dermal applications. The study showed that Harari area possess wealthy of indigenous knowledge on medicinal plants and their applications. Moreover, this ethnobotanical study can assist scientists for further research on medicinal properties of identified plants species that could contribute to development of new drugs.

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Enterococcus faecium probiotic effect on chicks experimentally infected by *Eimeria* species

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This study aimed to investigate the effect of a probiotic against experimentally coccidiosis in broilers using two protocols for prophylaxis and treatment. Two hundred and forty birds of one day old Ross chicks were divided into eight equal groups from one to eight. Two groups were controls; one without any treatment as control positive (group 8) and the other uninfected un treated as control negative (group 4). The remaining 6 groups were underwent of 2 programs for treatment; the groups were administered diclazuril alone, probiotic alone and a mixture of both of them before infection for ten days as a prophylaxis program. In the same time, the other 3 groups were administered diclazuril, probiotic and both of them at the day of clinical signs appearance for five days. A commercial probiotic containing *Enterococcus faecium* was used in this experiment. It applied via drinking water in inclusion rates 0,5gm/liter. Diclazuril was used as standard. Throughout the 42 days of experiment, body weight and feed intake were recorded every three days and also feed conversion ratios were calculated, in addition to oocysts count. Seven days after infection, the infected un treated control group showed the lowest weight gain values, while probiotics and diclazuril prophylaxis group had the highest weight gain values with the lowest oocyst shedding number. Probiotic containing groups had moderate lesion score values and moderate oocysts numbers in comparison with the groups contain diclazuril which recorded low values. In conclusion, a mixture of probiotic with diclazuril gave considerable improvement in growth performance and caecal health in comparison with infected un treated control birds. Fairly improvement achieved in probiotics only specially when used as prophylaxis that led to reduction in total oocyst shedding and reduce all negative impact but not prevent the infection at all by *Eimeria* species infection.

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Chemical study, antioxidant analysis and evaluation of the larvicidal potential against *Aedes Aegypti Larvae* of essential oil of *Ocimum Basilicum Linn*

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The purpose of this research was to accomplish chemical study, antioxidant analysis and evaluation of the larvicidal potential against *Aedes aegypti larvae* of essential oil from the leaves of *O. basilicum Linn*. The research was carried out in the Pharmacognosy and Phytochemistry Laboratory, Department of Biologicaland Health Sciences, Federal University of Amapá (UNIFAP), between July 2013 and March 2014. Arthropoda Laboratory, Department of Biological and Health Sciences, Federal University of Amapá (UNIFAP) between September 2013 and March 2014. The essential oil was obtained by hydrodistillation; the identification and quantification of components was achieved with the use of GC-MS analysis. The antioxidante activity was evaluated by the method of sequestration of DPPH. The essential oil was tested in the third larval state of the development of the mosquito Aedes Aegypti. The third larval instar were exposed to different concentrations of the oil (500, 400, 300, 200 and 130 ppm) in triplicates. Chromatographic analysis identified that the major constituents found in essential oil of *O. basilicum* were limonene (13%), 1,8-cineole (15%), linalool (20%) and methyl chavicol (45%). In trials of free radicals sequestration, the essential oil showed (AA%) 67.35±1.11 in the highest concentration and inhibitory concentration, IC50 value of 61.517 mg/mL. The essential oil of *O. basilicum* showed larvicidal potential with CL50 of 67.22 ppm. A more detailed study should be done to verify the larvicidal potential and biological mechanism of action, as several authors claimed that the constituent of essential oils affect the nervous system of the mosquito Aedes Aegypti and the action mechanism is not yet fully elucidated. New studies demand the development of tests using samples of lower concentrations to verify the degree of toxicity in other animal species, including man, and preparation of formulations that may function as a natural alternative to combat mosquito larvae.

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Piroxicam loaded solid lipid nanoparticles for topical delivery: Preparation, characterization and *in vitro* permeation assessment

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During the recent years, there has been rising attention to the development of topical delivery systems to facilitate drug permeation through the skin. The drugs commonly used are those with debatable oral administration. Although piroxicam is a valuable anti-inflammatory, antipyretic and analgesic drug, long term oral administration is limited due to the various GI side effects. The main aim of this study was to prepare and assess a topical formulation of piroxicam based on Solid Lipid Nanoparticles (SLNs), to improve its percutaneous permeation rate. Topical nano-lipidic gel of piroxicam was formulated and its pharmaceutical characteristics were evaluated. Piroxicam loaded SLNs were formulated by solvent emulsification evaporation method. The SLNs were composed of stearic acid and cholesterol as lipid phase, Brij35 and Brij72 as a stabilizer and acetone was used to dissolve the lipidic ingredients of the formulation. Particle size assessment, drug loading determination, entrapment efficiency assessment, and *in vitro* release study and skin permeation of the piroxicam was determined to characterize the SLNs and then these nanoparticles were formulated in gel as topical delivery system to assess percutaneous permeation of piroxicam. The SLNs were prepared in different size ranges from 100-300 nm and drug release behavior from two different nano-sized SLN suspensions was evaluated. Piroxicam nano-lipidic gel showed increased skin permeation of the drug over commercial piroxicam gel formulation and also mean particle size of formulated SLNs had significant effect on permeation rates.

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Standardization study of oral drops formula from *Paronychia argentea* extract

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Paronychia argentea has been proved to show hypoglycemic activity and is useful as gastric analgesic, in bladder, prostate, abdominal ailments treatment, and stomach ulcers treatment has. Vanillic acid and luteolin are considered as the major active constituents of *P. argentea* responsible for its biological activity. The aim is to develop an oral drop formula from the plant extract depending on a HPLC method for standardization of *P. argenteae*, depending on vanillic acid as a main efficacious active constituent in the plant. 76 g dried plant was extracted with 1 liter methanol. A tiny peak of vanilic acid was shown at 7.6 min, although statistically significant propylene glycol proved to be better extraction solvent for vanilic acid producing major peak with higher response (AUC). Linearity of the assay method was evaluated by determining concentration levels from concentration (0.4–4 μg mL^{-1}); correlation coefficient obtained was 0.995. The best-fit linear equation obtained was $Y=7e^{7}$ X-9817. The precision of the vanillic acid peak in the test solution was checked by injecting six individual preparations prepared according to the description mentioned in method of analysis.

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