



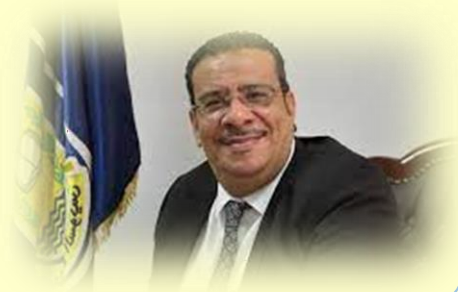
# 3<sup>rd</sup> Annual Conference of Graduate Researchers in Pharmaceutical Sciences

“ New Frontiers in Pharmaceutical Research”



## Under The Auspices of

**His Excellency Prof. Ahmed Zaki  
President of Suez Canal University**



**Her Excellency Prof. Magda Hagrass  
Vice President of Suez Canal  
University for Postgraduate Studies  
and Research**

**Prof. Dina M. Abo-ElMatty  
Dean of Faculty of Pharmacy**



**Prof. Amany Kamal Ibrahim  
Vice Dean of Faculty of Pharmacy  
for Postgraduate Studies and  
Research**



# 3<sup>rd</sup> Annual Conference of Graduate Researchers in Pharmaceutical Sciences

## “ New Frontiers in Pharmaceutical Research”

Time	Activity	Place
9:30 am – 10:00 am	Registration	Front Disk (Hall 1)
10:00 am – 10:30 am	Opening Ceremony	Hall 1
10:30 am – 11:00 am	Lecture 1: How to Use Endnote Like a Pro? Dr. Rer. Nat. Tamer H. Hassan, Director of MIS Unit and Deputy Director of DTU, Suez Canal University.	Hall 1
11:00 am - 11:30 am	Lecture 2: Molecular Characterization for Water Normal Flora and Cell Counting Using Flow Cytometric Method for Pharmaceutical Water Monitoring Dr. Marwa M. Azab, Department of Microbiology and Immunology, Faculty of Pharmacy, Suez Canal University.	
11:30 am – 12:00 pm	Oral Session 1: Analysis of Some Veterinary Drug Residuals in Food. Dr. Aziza Al-Sayed Mostafa, Ph.D. Department of Analytical Chemistry, Faculty of Pharmacy, Suez Canal University.	Hall 1
12:00 pm – 12:30 pm	Oral Session 2: Phytochemical Study and Biological Impact Evaluation of Certain Natural Extracts. Dr. Ahmed Khedr El-Sayed, M.Sc. Department of Pharmacognosy, Faculty of Pharmacy, Suez Canal University.	Hall 1
12:30 pm - 1:00 pm	Coffee Break	Break Hall
1:00 pm – 2:30 pm	Poster Session	Halls 2
2:30 pm – 3:00 pm	Closing Ceremony	Hall 1

# **BILOSOME: PHARMACEUTICAL RESEARCH INTEREST IN A BILE SALT BASED NOVEL CARRIER SYSTEM**

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## **Abstract**

Many formulations have been designed in the form of vesicular carriers such as liposomes and niosomes, which have been shown to be one of the potential candidates for drug delivery via the oral route, but their use is limited due to the gastrointestinal environment, which includes pH, enzymes, and bile salts. Because of these issues, researchers are working to improve the drug's stability and efficacy. Bilosomes have thus been created as a potential vesicular carrier system for the delivery of oral vaccines, transdermal, and parenteral targeted drugs. The current article discusses many aspects of the unique vesicular system for targeted drug delivery systems that is based on bile salts termed bilosomes. It contains details on bilosome composition, formulation methods, characterization techniques, and applications.

## **Keywords**

*Bilosomes, vesicular carriers, bile salts.*

## DESIGN AND OPTIMIZATION OF NSAIDS NIOSOMES FOR CANCER TREATMENT

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### Abstract

In this work, we have used the approach of drug-loaded nanocarriers for the treatment of cancer. NSAIDS successfully loaded in a single niosomal nanocarrier. The formulation was optimized through the d-optimal experimental design method for statistical optimization. The niosomes were characterized using various methods like particle size, PDI, zeta potential, % EE, and in-vitro drug release studies. The particle size range was found to be 128.26 to 1687 nm for all formulations. Zeta potential values varying from -5.43 mV -25.16 mV. Niosomal formula loaded with the drug was appropriate for enhance the bioavailability and its stability was required.

### Keywords

*Niosomes, NSAIDs, Anticancer.*

## **PREFORMULATION STUDIES ON DRUG DELIVERY SYSTEMS FOR MEBENDAZOLE**

**Rasha Zidan<sup>a</sup>, Pierre A. Hanna<sup>a\*</sup>, Shadeed Gad<sup>a</sup>, Esmat Zien El-Deen<sup>b</sup> and Yasser M. Mostafa<sup>c</sup>**

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### **Abstract**

This study represents the construction of calibration curves of UV absorbance for Mebendazole and measuring its solubility in different media such as 0.1M Methanolic HCl, Different pH media (pH 1, pH 7), Partitioning medium (Chloroform), Lipids screening (tween 80, span 20, sunflower oil, castor oil, coconut oil, linseed oil, oleic acid, polyethylene glycol 400 and Isopropanol) as a preformulation study of SNEDDS.

### **Keywords**

*Mebendazole, calibration curves, Solubility, SNEDDS.*

## DESIGN, FORMULATION, AND CHARACTERIZATION OF DRUG USING TRANSDERMAL DELIVERY SYSTEM

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### Abstract

Aim of study was to investigate the factors affecting formulation of lecithin organogels (LOGs) as a potential base for dexibuprofen transdermal application. LOGs are clear, viscoelastic and biocompatible jelly-like phases, chiefly comprised of hydrated phospholipids and appropriate organic liquid. This drug exhibits poor water solubility, and therefore its bioavailability is expected to be limited. Therefore, the aim of study was to formulate dexibuprofen in lecithin organogels. The study included development of dexibuprofen lecithin organogel systems using different cosurfactant as well as physicochemical and biological evaluation of the prepared formulae. In addition, studying the stability and efficiency of the selected organogel formulae was carried out to ensure their satisfactory for patient use.

### Keywords

*Dexibuprofen, Lecithin, Organogels, In vivo.*

# TRANSARTICULAR DELIVERY OF ANTIANGIOGENIC DRUG FOR TREATMENT OF RHEUMATOID DISEASE

**Noha Y. A. Alassy**

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## **Abstract**

The concept of targeted drug delivery is designed for attempting to concentrate the drug in the tissues of interest while reducing the relative concentration of the medication in the remaining tissues. Non-Ionic surfactant based vesicles, also known as niosomes, have attracted much attention in pharmaceutical fields due to their excellent behavior in encapsulating both hydrophilic and hydrophobic agents. Niosomes are vesicles composed of non-ionic surfactants, which are biodegradable, relatively nontoxic, more stable and inexpensive, an alternative to liposomes. Niosomes behave in vivo like liposomes, prolonging the circulation of entrapped drug and altering its organ distribution and metabolic stability. The addition of cholesterol increases the viscosity and hence rigidity.

## **Keywords**

*Niosome, Surfactant, Sonication, Rheumatoid.*



# DESIGN, FORMULATION & CHARACTERIZATION OF A CERTAIN DRUG USING NANO-SIZED LIPID-BASED FORMULAE FOR IMPROVING ITS AVAILABILITY & BIOAVAILABILITY

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## Abstract

This study's aim was to optimize a VLT-entrapped ethosomal formula that might be included into a sustained release dose form. The efficiency of the ethosomal formulation in increasing the availability and bioavailability of VLT as a poorly soluble drug and controlling its release from the dosage form was evaluated in vitro, ex vivo and in vivo. The results are as follows:

1. Optimization technique was successful in preparing an optimized formula with good entrapment efficiency and good release % of VLT.
2. The permeation of VLT from all the prepared ethosomal formulations followed Higuchi's diffusion model.
3. The VLT ethosomal dosage form had a greater peak plasma concentration and enhanced bioavailability in rats than the oral valsartan solution.

## Keywords

*Ethosomes, Availability, Bioavailability.*

# FORMULATION AND CHARACTERIZATION OF DRY POWDER FOR PULMONARY DRUG DELIVERY

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## **Abstract**

The present study evaluates the effect of operating parameters of a laboratory spray dryer on characteristics of lactose mono hydrate dry powders, with the goal of optimizing production of these powders for inhaled drug delivery. Lactose monohydrate/L-leucine mixtures were spray dried from aqueous and aqueous ethanolic solution using a laboratory spray dryer. A factorial design of experiment (DoE) was undertaken and process parameters adjusted were: inlet temperature, feed solution flow rate (pump setting), aspiration setting and ethanol concentration. Resulting powders were characterized in terms of particle size, SPAN, and yield. Particle size was mainly influenced by gas flow rate, whereas product yield and residual moisture content were found to be primarily affected by inlet temperature and spray solution feed rate respectively. Interactions between a number of different process parameters were elucidated, as were relationships between different responses.

## **Keywords**

*Aerodynamic particle size, Lung deposition, Nanocomposite microparticles, Spray drying.*

## FORMULATION OF BIO ADHESIVE FOR GASTROINTESTINAL ULCER TREATMENT

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### Abstract

The purpose of this research was to develop and evaluate a multi particulate system of chitosan and alginate hydrogel beads exploiting pH-sensitive property and specific biodegradability for colon-targeted delivery of curcumin pentaza complex. Chitosan hydrogel beads were prepared by the cross-linking method followed by enteric coating with Eudragit L100. All formulations were evaluated for particle size, encapsulation efficiency, swell ability, and in vitro drug release. this multiparticulate system to serve as a carrier to deliver macromolecules specifically to the colon and can be offered as a substitute in vitro system for performing degradation studies. Studies demonstrated that orally administered alginate, chitosan hydrogel beads can.

### Keywords

*Chitosan, pH-sensitive polymer, colon specific drug delivery, hydrogel beads, curcumin, pentaza.*

## **ENHANCING EFFICIENCY AND SAFETY OF CERTAIN ANTIBIOTIC VIA ENCAPSULATION IN NANODRUG DELIVERY SYSTEM**

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### **Abstract**

Some antibiotics (for example azithromycin) are needed to be more studied for their effectiveness on bacterial infections (such as *C. Trachomatis*) with the selected concentration which proved to be without good enough outcomes. The main objective of this study is to implement a design of nanodrug delivery architecture for the purpose of improving efficacy of certain antibiotic along with the efficient delivery for the purpose of enhancing treatment of harsh bacterial infection, which would require different approaches and potential administration of multiple doses, in addition to characterization of the optimized formula by evaluating the particle size, entrapment efficiency, In-vitro release, stability, Ex-vivo efficacy and safety study for increasing the activity and prolonged release characteristics of drug by nanocarriers encapsulation

### **Keywords**

*Pharmaceutical Industry, Nanodrug , azithromycin , Nanotechnology.*

## EVALUATION OF THE INFLUENCE OF FORMULATION PARAMETERS ON THE PROPERTIES OF APIXABAN-LOADED NLC

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### Abstract

Apixaban (APX) is an oral anticoagulant with a relatively low oral bioavailability. A pharmaceutical formulation containing Apixaban in the form of nanostructured lipid carriers (NLC) was chosen to enhance its bioavailability. The purpose of the study is to evaluate the influence of formulation parameters on the properties of NLC. Apixaban-loaded NLC was prepared by thin-film hydration ultrasonication method using stearic acid (SA) as solid lipid, oleic acid (OA) as liquid lipid and different surfactants. The effect of solid lipid to liquid lipid ratio, surfactant concentration and presence of lecithin on the mean particle size (PS), zeta potential (ZP) and entrapment efficiency (EE) was evaluated. Increasing liquid lipid and surfactant concentration improved NLC properties.

### Keywords

*Apixaban, NLC, surfactant, co-surfactant.*

## FORMULATION, CHARACTERIZATION, AND EVALUATION OF DRUG DELIVERY SYSTEMS FOR BIOAVAILABILITY ENHANCEMENT OF CERTAIN DRUG

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### Abstract

In the pharmaceutical industry, the systematic optimization of formulation using Quality by Design (QbD) approach is economic, highly precise and ensures product quality. The current endeavor was aimed to prepare Glimepiride ultra-fast melting tablets (UFMTs) based on QbD approach using suspension spray-drying technique.

The (3<sup>2</sup>) full factorial design was applied to obtain the optimal formulation in terms of; mannitol level (X1) and hydroxy propyl beta cyclodextrin level (HPβCDs; X2) as independent formulation variables. The D-mannitol and HPβCDs in certain formulations were spray-dried with Glimepiride separately then compressed with other excipients into tablets. The prepared tablets were tested for their mechanical strength, in-vitro and in-vivo disintegration, drug dissolution and in-vivo pharmacokinetic analysis.

### Keywords

*Glimepiride, Spray drying, Cyclodextrin.*

# A PHARMACEUTICAL STUDY ON FORMULATION, CHARACTERIZATION, AND EVALUATION OF NANO- DRUG DELIVERY SYSTEMS FOR ADVANCED DELIVERY OF CERTAIN DRUG

**Abdullah Ragheb, Shadeed Gad, Pierre A. Hanna**

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## **Abstract**

Nanosponges are a new class of materials and made of microscopic particles with few nanometers' wide cavities, in which a large variety of substances can be encapsulated. These particles are capable of carrying both lipophilic and hydrophilic substances and of improving the solubility of poorly water-soluble molecules. Nanosponges are tiny mesh-like structures that may revolutionize the treatment of many diseases and early trials suggest this technology is up to five times more effective at delivering drugs for breast cancer than conventional methods. The nanosponge is about the size of a virus with a 'backbone' (a scaffold structure) of naturally degradable polyester. The long length polyester strands are mixed in solution with small molecules called crosslinkers that have an affinity for certain portions of the polyester. They 'cross link' segments of the polyester to form a spherical shape that has many pockets (or cavities) where drugs can be stored. The polyester is predictably biodegradable, which means that when it breaks up in the body, the drug can be released on a known schedule .

## **Keywords**

*Nanosponges,  $\beta$ -Cyclodextrine, Cyclodextrin polymers.*

## NUTRACEUTICALS-LOADED NANOCARRIERS FOR THE PURPOSE OF TREATMENT OF HEPATOCTES

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<sup>b</sup> Department of Pharmaceutics and Industrial Pharmacy, Faculty of Pharmacy, Suez Canal University, Ismailia, Egypt.

### Abstract

This study aims to optimize a Silymarin entrapped Bile Based Vesicles (BBVs) formula as Supportive approach for treatment and/or protection of hepatocytes, Enhancing the activity, targeting ability and prolonged release characteristics of a model nutraceutical drug by nanoparticles encapsulation, Decreasing the dose in therapy and Increasing safety of the drug.

### Keywords

*BBVs, Silymarin, Targeting, Hepatocytes, Nutraceutical.*



## **INHIBITION OF MELANOMA GROWTH VIA ETHOSOMES OF METFORMIN HYDROCHLORIDE: IN VITRO AND IN VIVO STUDIES**

**Ibrahim A. Moussa**

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### **Abstract**

Penetration of the drug into the deepest skin layers is counted to be an important scientific interest. By using a new formulation that depended on ethosomes as metformin hydrochloride carriers were designed and evaluated by measuring their efficacy in penetration of the stratum corneum and sustained releasing into the skin. The ethosomes can penetrate into the deepest layers of the skin due to effect of both ethanol and iso-propyl, and can retain on the skin due to stearylamine. A statistical Box- Behnken experimental design was developed by using three variables at three levels; lecithin concentration, cholesterol concentration, and mix of ethanol and iso-propyl concentrations.

### **Keywords**

*Melanoma, Ethosomes, Metformin, Stearylamine, Iso-propyl alcohol.*

## DESIGN AND CHARACTERIZATION OF ORALLY DISSOLVING DOSAGE FORM FOR CERTAIN DRUG AS A POTENTIAL NEW DELIVERY SYSTEM

Ibrahim Ashraf, Shadeed Gad, Pierre A. Hanna

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### Abstract

Many of anti-hyperlipidemic drugs belongs to Class II drugs according to Biopharmaceutics classification system (BCS) which is characterized by having low solubility. Many approaches used in order to improve their solubility. Binary mixtures of pharmaceuticals significantly affect the physicochemical properties of each other. Understanding the behavior of pharmaceutical ingredients in binary mixtures will assist in formulating the pharmaceutical ingredients into good dosage forms. The aim of this work was to explore the effect of forming Co crystallization of antihyperlipidemic drugs and another ingredient such as some compounds and their tendency to form Co crystals and characterize the optimum promising mixtures by the mean of thermodynamic techniques such as X-Ray diffraction (XRD), Fourier-transform infrared (FTIR), Differential scanning calorimetry (DSC) and dissolution studies to select the optimum composition and ratio between the drug and co-former. In order to develop a new oral formula with improved drug solubility and bioavailability for the antihyperlipidemic drug then perform its in vitro characterization.

### Keywords

*Anti-hyperlipidemic, oral formula, Co-crystallization.*

## DESIGN, SYNTHESIS, AND IN SILICO STUDIES OF NOVEL ANTIVIRAL AGENTS

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### Abstract

Nowadays, all over the world, Middle East respiratory syndrome coronavirus MERS-CoV represents a big challenge for the healthcare system. In the present study, we investigate the anti-viral activity of the newly synthesized compounds. Biological results showed that all of the screened compounds might serve as promising candidates to treat MERS-CoV. They displayed  $CC_{50}$  ranging from 0.67 mM to 3.22 mM. In silico molecular modeling was made for all the target compounds in the active site of COVID-19 main protease (PDB: 6LU7) to rationalize their antiviral activity.

### Keywords

*MERS-CoV, Favipiravir, Anti-viral.*

## DESIGN, SYNTHESIS, AND IN SILICO STUDIES OF NOVEL SELECTIVE COX-2 INHIBITOR ANTI-INFLAMMATORY AGENTS

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### Abstract

Non-steroidal anti-inflammatory drugs (NSAIDs) exhibit their effect via inhibition of cyclooxygenase (COX) enzyme. The latter has two main isoforms COX-1 and COX-2. COX-1 is the constitutive form, it plays a significant role as house-keeping gene. COX-2 is the one believed to be induced in inflammation. So the new approach is the synthesis of novel selective COX-2 inhibitors that have potent anti-inflammatory action with decreased gastrointestinal adverse effect. Molecular modeling study with COX-2 enzyme was performed in order to select the promising candidates with optimum selectivity indices towards COX-2. Novel 2-benzamido-N-phenylthiophene-3-carboxamide derivatives were designed and synthesized and their anti-inflammatory activity and COX-2 selectivity were preformed.

### Keywords

COX-1, COX-2, Anti-inflammatory.

## SYNTHESIS OF NOVEL N-HETEROCYCLICS WITH POTENTIAL BIOLOGICAL ACTIVITIES

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### Abstract

A novel series of thiazoles and/or benzothiazoles were designed and synthesized. These new compounds could be obtained by the reactions of 2-aminothiazole and/ or 2-aminobenzothiazole and different reagents. The structures of the newly synthesized compounds were confirmed by spectral data along with elemental microanalysis. These new compounds might be screened for their antitumor activity against human cancer cell lines namely HL-60 (leukemia), BGC-823 (stomach), and HEP-2 (larynx cancer).

### Keywords

*Thiazoles, Antitumor.*

# SYNTHESIS AND MOLECULAR MODELING OF SOME NOVEL HETEROCYCLIC SCAFFOLDS AS POTENTIAL ANTITUMOR AGENTS

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## Abstract

Drug targeting is one of the new treatment approaches of cancer. Dual inhibition of both epidermal growth factor receptor (EGFR) and human epidermal growth factor receptor 2 (HER2) was found to be a proven approach for the treatment of cancer. New heterocyclic compounds were designed and will be synthesized and evaluated as anti-tumor agents. The molecular modeling study aimed to design new compounds with high selectivity and inhibitory activity against EGFR/HER2.

## Keywords

*EGFR, HER2, anti-tumor*



## **DESIGN, SYNTHESIS AND BIOLOGICAL EVALUATION OF SOME NOVEL ORGANIC COMPOUNDS WITH POTENTIAL BIOLOGICAL ACTIVITY**

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### **Abstract**

Hyperlipidemia, a key feature of the metabolic syndrome and is the major cause of heart disease, stroke and death in most industrialized world. Current available therapies for hyperlipidemia include statins, fibrates, niacin/nicotinic acid and bile acid sequestrants. The hypolipidemic effects of fibrates are obtained through activation of PPAR $\alpha$  receptor, by lowering the level of TG, LDL and increasing the level of HDL by increasing the transcription of apolipoprotein. Therapy with fibrates is associated with increased risk for myopathy and hepatotoxicity. So, there is need to develop newer synthetic hypolipidemic agents with fewer or no side effects.

### **Keywords**

*Hyperlipidemia, Metabolic syndrome, Fibrates and PPAR $\alpha$  receptor.*

## SYNTHESIS AND BIOLOGICAL EVALUATION OF HETEROCYCLIC COMPOUNDS WITH POTENTIAL BIOLOGICAL ACTIVITIES

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### Abstract

Hypertension is a serious medical condition that significantly increases the risk of heart, brain, kidney and other diseases. For adults with hypertension, WHO recommends the use of drugs from any of the following three classes: Thiazide and Thiazide-like agents, Angiotensin-Converting Enzyme Inhibitors (ACEis) and Calcium Channel Blockers (CCBs). CCBs are used for the treatment of hypertension. They block the transmembrane flow of calcium ions through voltage-derived channels (L-type channels) in vascular and nonvascular smooth muscle which results in smooth muscle relaxation, decreased peripheral vascular resistance, dilation of coronary arteries, and a decrease in myocardial contractility. We seek to synthesis new CCBs by biginelli reaction. The synthesized compounds would be evaluated for their antihypertension activity, and docking studies would be performed.

### Keywords

*Hypertension, CCBs, Biginelli reaction.*



## SYNTHESIS AND BIOLOGICAL IMPORTANCE OF 1,2,3-TRIAZOLE DERIVATIVES AS POTENTIAL THERAPEUTICS

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### Abstract

1,2,3-Triazole is a privileged building block in the discovery of new anticancer agents. 1,2,3-Triazole derivatives would be synthesized with the aim of developing new effective cytotoxic agents with less side effects. 1-Azido-4-nitrobenzene was prepared via diazotization of 4-nitroaniline using  $\text{NaNO}_2/\text{HCl}$  followed by azidation using  $\text{NaN}_3$ . Ethyl 5-methyl-1-(4-nitrophenyl)triazole-4-carboxylate was prepared via cyclization of the azide through the reaction with ethyl acetoacetate in presence of the strong base  $\text{NaOEt}$  at room temperature. The key precursor 5-methyl-1-(4-nitrophenyl)triazole-4-carbohydrazide was obtained by nucleophilic acyl substitution reaction of with hydrazine hydrate (99%) in absolute ethanol at 55–80 °C. Structural elucidation was done using IR,  $^1\text{H-NMR}$  analysis.

### Keywords

*1,2,3-Triazole, Hydrazide, Anticancer activity.*

## SYNTHESIS AND BIOLOGICAL IMPORTANCE OF NOVEL HETEROCYCLICS AS POTENTIAL THERAPEUTICS

Sherief M. Abdel Wahab<sup>b</sup>, Ranza Elrayess<sup>a</sup>, Asmaa S. A. Yassen<sup>a</sup>, Khadiga M. Attia<sup>b</sup>, Hosam A. Elshihawy<sup>a</sup>

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<sup>b</sup> Department of Pharmaceutical Organic Chemistry, College of Pharmaceutical Science and Drug Manufacture, Misr University for Science and Technology

### Abstract

New N-substituted 3,5-bis (substituted benzylidene-4-oxopiperidin-1-yl) derivatives were prepared through aldol condensation of aldehydes and ketones followed by N- substitution. The new compounds will be evaluated for their anti-hypertensive activity.

### Keywords

*Aldol condensation, Anti-hypertension.*



## **DETECTION AND DEVELOPMENT CONTROLS FOR CORONAVIRUS DISEASE 2019 (COVID-19)**

**Sara Tarek Said Zouelfakar Soliman**

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### **Abstract**

The newly evolved Coronavirus Disease 2019 (COVID-19) cause mild to moderate respiratory illness to most of the infected populations and sever complications associated with elder and patients with underlying diseases with thousands of morbidities and mortalities worldwide. The person-to-person transmission is confirmed which speed up the spread of the virus. There is an urgent need for the development of rapid, competent, and reliable methods for direct detection of the virus in order to slow down the transmission.

Diagnosis of COVID-19 is based on the detection of the viral RNA in throat swab samples using real time reverse transcription polymerase chain reaction RT-PCR technique with the simultaneous amplification of two target genes (open reading frame1ab (ORF1ab) and nucleo-capsid-protein (N)).

### **Keywords**

*COVID-19, RT-PCR, Rapid antigen, Open reading frame1ab (ORF1ab), Nucleo-capsid-protein (N).*

# DESIGN, SYNTHESIS AND BIOLOGICAL EVALUATION OF NOVEL NITROGENOUS COMPOUNDS AS POTENTIAL ANTICANCER AGENTS

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## Abstract

The role of IL 6/JAK/STAT3 pathway in myeloproliferative disorders has been investigated for years because the hyperactivation of this pathway is generally associated with a poor clinical prognosis. Signaling of this pathway control the proliferation and metastasis of tumor cells. Genes responsible for encoding JAK enzymes specially JAK2 are usually mutated in myeloproliferative neoplasms which cause hyperactivation of JAK/STAT3 signaling the reason which lead to poor prognosis. Hyperactivation of STAT3 in tumor cells happens as a result of high IL 6 levels in the serum and/or in microenvironment of the tumor. Herein, we review the role of new drug like molecules of thiazole derivatives in targeting IL 6/JAK2/STAT3 pathway and inhibiting its undesired effect on cancer cells.

## Keywords

*Myeloproliferative, JAK2, IL6, Thiazole.*



## DERIVATIZATION AND DETERMINATION OF CERTAIN DRUGS IN PHARMACEUTICAL PREPARATIONS AND BIOLOGICAL FLUIDS

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### Abstract

An innovative reagent will be developed based on the click chemistry reactions for analysis of some selected compounds. Click chemistry generally used in conjugation, allowing the joining of substrates of choice with specific molecules ex: Huisgen reaction and Heck reaction. Huisgen reaction is cycloaddition between an azide and an alkyne in the presence of copper (I) as a catalyst to form stable five-membered triazole ring .Owing to the high specificity of the Huisgen reaction, we considered that fluorogenic azide could be used as specific derivatization reagent for alkyne moiety. We study the possibility of utilizing some novel compounds as specific reagent for some selected drugs and apply it in their determination in dosage forms and biofluids.

### Keywords

*Click chemistry, Huisgen reaction, Fluorescent triazole.*



# **MODERN ANALITICAL TECHNIQUE FOR DETERMINATION OF CERTAIN CARDIOVASCULAR AGENT IN VARIOUS PHARMACEUTICAL FORMULATIONS AND BIOLOGICAL FLUIDS**

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## **Abstract**

specific, sensitive, and precise stability-indicating chromatographic methods have been developed, optimized and validated for determination of an Angiotensin converting enzyme inhibitor and a calcium channel blocker in their mixtures .in biological fluids and in the presence of their degradation products. The first method was based on thin-layer chromatography (TLC) combined with densitometric determination of the separated bands.

The second method was based on high-performance liquid chromatography. Different parameters affecting the suggested methods were optimized for maximum separation of the cited components. System suitability parameters of the two developed methods were also tested.

The suggested methods were validated in compliance with the ICH guidelines and were successfully applied for the quantification of the components.

Both methods were also statistically compared to each other and to the reference methods with no significant differences in performance.

## **Keywords**

*TLC, HPLC.*



# **LOSARTAN AND ROSUVASTATIN DETERMINATION IN RAT PLASMA USING LC- MS/MS TECHNIQUE FOR APPLICATION INTO PHARMACOKINETIC AND DRUG- DRUG INTERACTION STUDIES**

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## **Abstract**

The combined therapy benefits of losartan and rosuvastatin, within the vascular injury, have been well characterized. Nonetheless, the pharmacokinetic interactions between such therapeutic agents have not been yet figured out, making the need for a sensitive analytical technique to be of great significance. In view of this, a highly selective, sensitive, and wellvalidated liquid chromatography–tandem mass spectrometric technique has been developed for the simultaneous estimation of losartan (LOS) and rosuvastatin (ROS) within the rat plasma using simvastatin as an internal standard. The pharmacokinetic interactions after oral co administration of both drugs furnished significant changes within their respective pharmacokinetic

parameters including peak-plasma concentration, elimination  $t_{1/2}$ , AUC. Finally, the proposed method provides a useful tool for the drug–drug interaction investigations being valuable for prospective bioequivalence studies and therapeutic drug monitoring .

### **Keywords**

*LC-MS/MS, Losartan, Rosuvastatin, Drug-drug interaction, Pharmacokinetic.*





## **MOLECULAR MODELING, SYNTHESIS AND BIOLOGICAL INVESTIGATION STUDIES TARGETING NEW NOVEL ANTICANCER AGENTS**

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### **Abstract**

Cancer is a serious disease in which some of the body's cells develop uncontrollably and extent to other parts of the human body. It can start anywhere in the human body. After several years of chemotherapy researches, cancer disease remains one of the most life-threatening diseases to be treated, and because of several reasons that include diversity of the tumour, resistance of the drug and side effects of therapy. cancer is considered to be one of the main reasons of human death which is estimated at 8.2 million and will likely increase to 13 million worldwide per year .Also oncology has become the largest therapeutic region in the pharmaceutical industry in terms of the number of project, clinical trials and research and development spending .This introductory overview gives a summary perspective on the discovery of agents that aim to selectively target, regulatory and signalling processes known to drive tumourigenesis. So the development of potential inhibitors is essential as an important trail to decrease this death rise in the future.

### **Keywords**

*Cancer ,tumor ,chemotherapy.*

## **THE BIO-CLINICAL EFFECTS OF THE (SACUBITRIL-VALSARTAN) COMBINATION ON PATIENTS WITH CHRONIC HEART FAILURE**

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### **Abstract**

In Egypt, around two-thirds of Egyptian heart failure (HF) patients are suffering from heart failure with reduced ejection fraction. Although there has been a vast advancement in the field of heart failure treatments in the last decade and many drugs and combinations such as sacubitril/valsartan have improved prognosis and quality of life in patients with heart failure, still there is a high demand for more comparative studies in a wide range and different races of patients. Herein, we tried to evaluate bio-clinical effects of sacubitril/valsartan in comparison to valsartan in sixty Egyptian patients with heart failure over six months. Our primary parameters to be assessed were ejection fraction and N-terminal pro-B-type natriuretic peptide level (NT-proBNP).

### **Keywords**

*Heart failure, Sacubitril/Valsartan, Ejection fraction, NT-proBNP.*

**CARRICHTERA ANNUA DC (CRUCIFERAE)**  
**CHEMICAL PROFILING, ANTIOXIDANT, ANTICANCER**  
**ACTIVITIES**

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**Abstract**

Carrichtera annua is a plant belongs to family Cruciferae. There are few reports on the chemical constituents and biological effects of this plant. Therefore, this study aimed to evaluate the antioxidant and anticancer effects of the plant as well as identification of Carrichtera annua phytochemicals by LC-ESI-TOF-MS/MS. The obtained results revealed that C. annua exhibited promising cytotoxicity on MCF-7 and HepG2 cancer cell lines. In addition C. annua extract showed significant antioxidant effect when evaluated by DPPH, FRAP and, TAC assays. On the other hand, Chemical profiling of C. annua extract revealed the presence of phenolic acids, flavonoids and glucosinolate. In conclusion C. annua could be a promising candidate for cancer therapy.

**Keywords**

*Carrichtera annua, LC-ESI-TOF-MS/MS, antioxidant, anticancer.*



## **CHEMICAL INVESTIGATION AND BIOLOGICAL ASSESSMENT OF CHEMICAL CONSTITUENTS FROM SOME PROMISING NATURAL SOURCES**

**Dina M. Hal, Jihan M Badr, Safwat A. Ahmed, Amany K. Ibrahim, Enas E. El-Tamany, Reda F. Abdelhameed**

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### **Abstract**

Nature is the major source for many medicines in use. The plant-derived compounds have a long history of clinical use, better patient tolerance and acceptance. Furthermore, chemical compounds such as muscarine, cannabinoids, forskolin, physostigmine, colchicine and phorbol esters, all obtained from plants, are important tools used in pharmacological, biochemical and physiological studies. *Zygophyllum album* plant was selected for our study as the aerial parts of *Zygophyllum album* are used in folk medicine as an antidiabetic agent and as a drug active against several pathologies. Our research efforts are oriented to discover bioactive drug candidates from the *Zygophyllum album* plant, we have investigated total antioxidant activity and total phenolics for both aerial and root parts.

### **Keywords**

*Total antioxidants, Total phenolics, Zygophyllum album.*

## EVALUATION OF TOTAL PHENOLICS AND FLAVONOIDS CONTENTS FOR DIFFERENT FRACTIONS OF LEAVES OF SWINGLEA GLUTINOSA

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### Abstract

The Rutaceae (Rue) family contains about 158 -160 genera dividing into about 1800–1900 species. Swinglea glutinosa is a member of the Rue family which was previously reported to contain acridone alkaloids, severine alkaloids, coumarins, essential oil, and triterpenes. Also, some biological activities as antioxidant, antiparasitic, anticancer were attributed to it. This work aims to evaluate methylene chloride, ethyl acetate, and n-butanol fractions of methanolic extract of glutinosa leaves through determination their total phenolic (TPC) and flavonoids (TFC) contents. Remarkably, the n-butanol fraction was the richest with a TPC of  $36.52 \pm 1.96$  mg (GAE)/g and TFC  $8.94 \pm 0.72$  mg (QE) /g extract followed by the ethyl acetate fraction and coming last the methylene chloride fraction.

### Keywords

*Rutaceae, Swinglea glutinosa, Total phenolic content.*

## **PHYTOCHEMICAL STUDY AND BIOLOGICAL IMPACT EVALUATION OF CERTAIN NATURAL EXTRACTS**

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### **Abstract**

Chemical investigation of the Bamboo shoot skin *Phyllostachys heterocycla* var. *pubescens* led to the isolation of sixteen metabolites of which two new compounds were identified. The structure elucidation of isolated compounds was achieved by spectroscopic analysis. Identification of the rest of the constituents was done using GC-MS technique. New compounds (9 and 11) exhibited promising in vitro cytotoxicity against MCF-7 breast cancer cell line and against HepG2 liver cancer cell line. In silico studies further confirmed the apoptotic activity of the new compounds. In vivo studies of the crude extract in rats indicated strong anti-inflammatory properties of the crude extract.

### **Keywords**

*Phyllostachys heterocycla, GC-MS, cytotoxic activity.*

## **RUBIA TINCTORUM ROOT EXTRACTS: CHEMICAL PROFILE AND MANAGEMENT OF TYPE II DIABETES MELLITUS**

**Enas E. Eltamany<sup>a</sup>, Mohamed S. Nafie<sup>b</sup>, Dina M. Khodeer<sup>c</sup>, Aya H. H. El-Tanahy<sup>d</sup>, Maged S. Abdel-Kader<sup>d,e</sup>, Jihan M. Badr<sup>a</sup> and Reda F. A. Abdelhameed<sup>a</sup>**

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### **Abstract**

Chemical and biological profiling of Rubia tinctorum roots were performed. The activities of extracts were determined considering the antidiabetic effect against type II diabetes mellitus together with anti-obesity and hepatoprotective effects and lipid profile. The methanolic extract of Rubia tinctorum exhibited significant decreasing of body weight, improving lipid profile, normalizing hyperglycaemia, insulin resistance, hyperinsulinemia. Additionally, it showed enhancement of liver function. Methanolic extract was subjected to LCHRMS analysis to determine its chemical constituents.

Finally, the chemical constituents were evaluated by molecular docking which carried out to identify the interaction of a panel of 45 compounds in silico and to correlate the structures to their anti-diabetic activity.

## **Keywords**

*Rubia tinctorum.*





## PYHTOCHEMICAL INVESTIGATION OF SECONDARY METABOLITES FROM EGYPTIAN NATURAL SOURCES

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### Abstract

Cichorium endivia has been used for many years in folk medicine as anthelmintic and for treatment of diabetes, liver diseases and gastrointestinal tract disorders. Phytochemical investigation of the methanolic extract of Cichorium endivia led to the isolation of 3 sterols; stigmasterol (1),  $\beta$ -sitosterol (2) and campesterol (3).

### Keywords

*Cichorium endivia, sterols.*

## CHEMICAL STUDY OF SOME BIOACTIVE METABOLITES FROM NATURAL SOURCES

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<sup>b</sup>Department of Pharmacognosy, Faculty of Pharmacy, Sinai university, El-Arish, Egypt.

### Abstract

This study focuses on *Striga hermonthica* plant which belongs to the family Orobanchaceae. Three compounds were isolated from the plant which are luteolin, apigenin and protocatechuic acid. Spectroscopic elucidation of the chemical structure of these compounds was achieved using spectroscopic techniques as MS and NMR analyses in conjunction with co TLC. Analysis of fatty acid constituents using GC-MS analysis of the hexane fraction has revealed the presence of palmitic, arachidic and oleic acids. LC-MS-MS analysis of the methanolic extract using both positive and negative modes lead to identification of 108 and 111 peaks, respectively. The plant showed antioxidant activity using DPPH scavenging, TAC and FRAP assays.

### Keywords

*Striga*, luteolin, Apigenin, antioxidant, LC-MS-MS

## PHYTOCHEMICAL SCREENING AND BIOLOGICAL STUDIES OF SOME NATURAL PLANT SPECIES IN EGYPT

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### Abstract

Herbal medicine represents one of the most important fields of traditional medicine all over the world. Natural products have been used for the prevention and treatment of various diseases for thousands of years. In modern medicine, natural products have made huge contributions towards drug discovery. Due to economic conditions and availability, plants are the main medicinal source to treat infectious diseases in many developing countries. Medicinal plants which contain many active principles of therapeutic values have been used for centuries as treatments of many human diseases. Plants can produce many bioactive phytochemical compounds and these phytochemical compounds are having therapeutic activities such as anticarcinogenic, antimutagenic, anti-inflammatory, and antioxidant properties. There are more than 2000 phytochemicals in plants, which can be grouped according to their structural characteristics in four large groups: terpenoids, phenolic compounds, nitrogen compounds and sulfur compounds.

This study focuses on *Striga hermonthica* plant which belongs to the family Orobanchaceae. Three compounds were isolated from the plant which are luteolin, apigenin and protocatechuic acid. Spectroscopic elucidation of the chemical structure of these compounds was achieved using spectroscopic techniques as MS and NMR analyses in conjunction with co TLC. Analysis of fatty acid constituents using GC-MS analysis of the hexane fraction has revealed the presence of palmitic, arachidic and oleic acids. LC-MS-MS analysis of the methanolic extract using both positive and negative modes lead to identification of 108 and 111 peaks, respectively. The plant showed antioxidant activity using DPPH scavenging, TAC and FRAP assays. Phytochemical compounds provide protection against several diseases. The therapeutic value of the medicinal plants is derived from the association between the chemical configuration of the effective phytochemicals and the pharmacodynamic effect they produce on the body. One of the widely distributed families is family Lamiaceae, formerly called Labiatae, the mint family of flowering plants, with 236 genera and more than 7,000 species. Our current study will include pharmacological and chemical investigation of different genera belonging to this family in order to verify the activities for which the plant is used in traditional medicine.

### **Keywords**

*Lamiaceae Phytochemical investigation, Biological evaluation.*

## CHEMICAL, BIOLOGICAL AND ANALYTICAL EVALUATION OF SELECTED PROMISING NATURAL PRODUCTS

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### Abstract

*Cynara scolymus* L. (Artichoke) is a traditionally consumed vegetable in many countries. In Egypt, this plant has been successfully cultivated during the last years. The present study is an attempt to investigate and compare the phytochemical composition of *C.scolymus* Large and small leaves and aerial axis . The result reveals the presence of bioactive constituents comprising flavonoids, total phenolic compounds in plant parts. The presence of these phytochemicals can be correlated with the medicinal potential of this plant.

### Keywords

*Cynara scolymus, Compositae, phenolic compounds, flavonoids*

## **PHYTOCHEMICAL ANALYSIS AND BIOLOGICAL EVALUATION FOR SOME SECONDARY METABOLITES FROM WILD EGYPTIAN PLANTS**

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University, Ismailia 41522, Egypt*

### **Abstract**

A part of our scientific research is to discover new pharmaceutical raw substances from wild plants in the Egyptian desert plants. We are seeking to discover the regions where these plants grow, In Egypt, wild plants located in most desert lands. These plants can synthesize a large number of chemical compounds have important biological effects. Many of these plants have long-term beneficial effects on health when consumed by humans and can be used to treat human sickness.

### **Keywords**

*phenolic compounds, flavonoids*

## SEPARATION OF NEW CHEMICAL COMPOUNDS FROM SOME MEDICINAL PLANTS

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### **Abstract**

*Portulaca oleracea* L. is a widespread medicinal plant that is used not only as an edible plant, but also as a traditional medicine for alleviating a wide spectrum of diseases. It is a well-known plant in the European Traditional Medicine. Purslane presents a variable chemical constituents mainly belong to flavonoid (such as Kaempferol, apigenin, luteolin, myricetin, and quercetin), alkaloid (as Oleracein A-E), terpenoid (Portuloside A and B and portulene which is a diterpene) and organic acid (omega-3 fatty acids, particularly  $\alpha$ -linolenic acid) and other classes of natural compounds including terpenoids, fatty acids, polysaccharides, vitamins, sterols, proteins, and minerals.

### **Keywords**

*portulene; rigla; Portulaca oleracea*

## **DETERMINATION OF SOME HAZARDOUS COMPOUNDS IN CERTAIN EDIBLE HERBAL PRODUCTS**

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### **Abstract**

The present study is conducted to determine the content of estragole as harmful component in *Foeniculum vulgare* (Fennel) and *Pimpinella anisum* (Anise). Extraction of fennel essential oil and anise essential oil were done using maceration technique. Different solvents were used for extraction, and when comparing results using normal phase TLC, Hexane was chosen as a solvent of choice. Mobile phase for RP HPLC was chosen to give best separation. Different samples of fennel and anise will be prepared. Calibration curve of estragole was constructed to cover different concentrations. Quantitative determination of estragole by RP HPLC will be performed and validation of the analytical method will be done to ensure that the method is suitable for its intend use.

### **Keywords**

*HPLC, Fennel, Anise, estragole*



## ANTIOXIDANT AND ANTI-INFLAMMATORY EFFECT OF ISOLATED FLAVONOIDS FROM CYNANCHUM ACUTUM

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### Abstract

The compounds were tested in vivo for their anti-inflammatory and antioxidant properties in a rat model of type 2 diabetes. Compounds 1-5 significantly reduced oxidative stress and increased erythrocyte lysate levels of antioxidant enzymes, along with the amelioration of the serum levels of inflammatory markers in rat model of type 2 diabetes. The structures of the compounds were elucidated based on 1D NMR spectroscopy and high-resolution mass spectrometry (HR-MS), and by comparison with data reported in the literature. Upregulation of miR-146a expression and downregulation of nuclear factor kappa B (NF- $\kappa$ B) expression were detected in the liver and adipose tissue of rats treated with the isolated flavonoids.

### Keywords

*miR-146a; nuclear factor kappa B; flavonoids*

## **CHEMICAL INVESTIGATION AND BIOLOGICAL EVALUATION OF SECONDARY METABOLITES FROM NATURAL SOURCES**

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### **Abstract**

*Alhagi maurorum*, a plant of family Fabaceae, was evaluated for its hepatoprotective effect against paracetamol-induced toxicity in experimental mice. The obtained results show a significant difference in liver enzymatic and non-enzymatic parameters in comparison to both control and silymarin treated groups. Furthermore determination of the total phenolic and flavonoid contents, Antioxidant Assay, DPPH Radical Scavenging Activity and more over phytochemical profile was achieved by LC-MS/MS.

### **Keywords**

*Alhagi maurorum, hepatoprotective, phytochemical screening*

# INVESTIGATION OF BIOLOGICALLY ACTIVE METABOLITES FROM SOME SELECTED FUNGI

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## Abstract

Fungal natural products and their effects have been known to humankind for hundreds of years. However, their later medicinal applications, followed by the discovery of the first class of antibiotics, penicillins and other drugs of fungal origin, have altered the historically negative reputation of fungal “toxins”. The development of new antimicrobial drugs is currently a major global challenge, mainly due to antimicrobial resistance phenomena. This study aims to screen some native fungi for their alkaloidal content and biologically testing them against a panel of human and plant pathogenic bacteria and fungi. Afterwards, the bioactive extracts will be subjected to bioassay guided fractionation in order to isolate the potential active metabolites that are responsible for the exhibited biological effects.

## Keywords

*Endophytes, Fungi, Antimicrobial, Metabolites*

**PHYTOCHEMICAL ANALYSIS AND BIOLOGICAL ACTIVITIES  
OF ETHANOLIC EXTRACT OF COLVILLEA RACEMOSA  
LEAVES**

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**Abstract**

Colvillea racemosa Bojer ex Hook (Colville's glory tree, whip tree) is cultivated as an ornamental in some tropical countries and is used locally as a decorative shade tree. It belongs to a monotypic genus of the family Fabaceae and is native to Madagascar. The plant extract was prepared using ethanol (70%). The ethanolic extract displayed an IC<sub>50</sub> value of 73.21 and 124.2 µg/ml against alpha-glucosidase and alpha-amylase respectively.

Also, the antioxidant property of the alcoholic extract was examined using the 2, 2-Diphenyl picrylhydrazyl (DPPH) method, providing  $IC_{50} = 143.4 \mu\text{g/ml}$ .

The cytotoxicity activity against HCT-116 cell line (human colon cancer cell line) was done using 3-(4,5-dimethylthiosolyl-2)-2,5-diphenyl tetrazolium bromide (MTT) assay. The results revealed that alcoholic extract with  $IC_{50} = 7.77 \pm 0.4 \mu\text{g/ml}$ . The phenolic and flavonoid contents of the alcoholic extract of *Colvillea racemosa* were determined using HPLC. Seventeen phenolic components and six flavonoid compounds were detected.

### **Keywords**

*Colvillea racemosa*, antidiabetic, DPPH, cytotoxicity, HPLC

## PHYTOCHEMICAL INVESTIGATION OF SECONDARY METABOLITES FROM ARTEMISIA MONOSPERMA

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### Abstract

Artemisia monosperma (Delile) is a green aromatic shrub that grows widely in the deserts of Middle East. The secondary metabolites identified from Artemisia species are recognized for their biological activities as antioxidants, anti-inflammatory and antimicrobial compounds. This study aims to isolate compounds from A. monosperma that might have potential biological activities thus be translated into pharmaceutical uses. A. monosperma extraction was done using different organic solvents. The chemical structures of the isolated compound were determined based on spectroscopic analysis of ultraviolet, mass and nuclear magnetic resonance spectra.

This successful isolation of these natural compound from *A. monosperma* can contribute further to the evaluation of bioactive compounds against disorders including but not limited to inflammatory associated disorders and microbial infections.

### **Keywords**

*Artemisia monosperma* , *flavonoids*, *Antimicrobial activity*, *anti-oxidant*, *anti-inflammatory*.

## PHYTOCHEMICAL INVESTIGATION OF SECONDARY METABOLITES FROM SOME PLANTS GROWING IN NORTH SINAI

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### Abstract

Plants produce a great variety of secondary metabolites (phytochemicals), which protect them against herbivores and microbial infections and act as pigments, hormone or signal compounds to attract pollinator. Also, these phytochemicals have a broad spectrum of biological and therapeutic activities, so the medicinal plants or their products can be used for treatment of human diseases and health disorders, which is called herbal medicine or phytomedicine. In contrast to conventional drugs, herbal medicine is more safe and exert very low or no side effects

### Keywords

*Phytochemicals , Herbal medicine , Biological activities.*



## **ISOLATION AND IDENTIFICATION OF SECONDARY METABOLITES FROM EGYPTIAN NATURAL SOURCES INHABITED IN NORTH SINAI**

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### **Abstract**

Natural products from medicinal plants, either as pure compounds or as standardized extracts, provide unlimited opportunities for new drugs leads because of chemical diversity natural products. Interest particularly in edible plants has grown throughout the world. Botanicals and herbal preparations for medicinal usage contain various types of bioactive compounds. So our study will base on biological and chemical investigation of some Egypt natural sources.

### **Keywords**

*Natural products, bioactive compounds, WHO.*

## MIMUSOPS GENUS FAMILY: SAPOTACEAE

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### Abstract

The Sapotaceae is a family of flowering plants, belonging to order Ericales and divided into five tribes with 53 genera and about 1250 species. *Mimusops* is an important genus of family Sapotaceae which is native to tropical and subtropical regions of Asia, Africa, Australia, and various Oceanic islands, about 57 species are reported for *Mimusops* genus. *Mimusops* is an important genus of large pharmaceutical and medicinal importance such as flavonoids, phenolic compound, triterpenoids, saponins and steroidal glycosides. Several biological activities were reported for *Mimusops* genus like antioxidant, anti-inflammatory, antimicrobial, cytotoxic, hepatoprotective, antiulcer, neuroprotective, anti-urolithiatic, anticonvulsant, anthelmintic and other important biological activities. Hence, this review aims to present a holistic overview on the phytochemical and biological diversity of *Mimusops* genus.

### Keywords

*Sapotaceae; Mimusops; Phytochemical; Biological.*

## **ISOLATION AND STRUCTURE ELUCIDATION OF BIOLOGICALLY ACTIVE SECONDARY METABOLITES FROM ASTERACEAE PLANTS GROWING IN EGYPT**

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### **Abstract**

The isolation and purification of bioactive compound from of *Carduus pycnocephalus*. The isolation of the phytochemical by column chromatography with elution of hexan, ethyl acetate yielded Apeginin and two other compounds. The chemical structure of the isolated compound was elucidated by UV, MS, <sup>1</sup>H NMR, <sup>13</sup>C NMR spectroscopic methods. GC/MS analysis of the unsaponifiable matter of the hexan extract of the aerial parts of the plant revealed the presence of nineteen compounds. In addition, the study of the anti-inflammatory, antispasmodic and hypotensive activities.

### **Keywords**

*c.pycnocephalus, Flavonoids, Anti-inflammatory, gc/ms chromatography, antioxidant*



## **DETECTION AND DEVELOPMENT CONTROLS FOR CORONAVIRUS DISEASE 2019 (COVID-19)**

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### **Abstract**

The newly evolved Coronavirus Disease 2019 (COVID-19) cause mild to moderate respiratory illness to most of the infected populations and sever complications associated with elder and patients with underlying diseases with thousands of morbidities and mortalities worldwide. The person-to-person transmission is confirmed which speed up the spread of the virus. There is an urgent need for the development of rapid, competent, and reliable methods for direct detection of the virus in order to slow down the transmission.

Diagnosis of COVID-19 is based on the detection of the viral RNA in throat swab samples using real time reverse transcription polymerase chain reaction RT-PCR technique with the simultaneous amplification of two target genes (open reading frame1ab (ORF1ab) and nucleo-capsid-protein (N)).

### **Keywords**

*COVID-19, RT-PCR, Rapid antigen, Open reading frame1ab (ORF1ab), Nucleo-capsid-protein (N).*

## **BIOSYNTHETIC POTENTIAL OF BIOACTIVE PRODUCER ISOLATED FROM MARINE INVERTEBRATE**

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### **Abstract**

Marine invertebrates-associated microorganisms were considered important sources of bioactive products. This study aims to isolate sponge associated bacteria with biological activity from the Red Sea and the molecular identification of the associated microbial communities using 16S rRNA metagenomic approaches. One hundred and ten bacterial strains were isolated from five different sponges and screened for their antimicrobial activity. Eighty-four isolates showed antimicrobial activity and six samples showed good antiviral activity against MERS-CoV ranges from 70.7% to 51.4% viral inhibition. Moreover, metagenomics analysis of marine sponge associated bacteria showed high diversity and bacterial communities showed high seasonal variations in Summer and Winter.

### **Keywords**

*Red Sea, Sponges, Microbial Community, Biological activity, Antimicrobial activity, MERS-CoV, 16Sr RNA, Metagenome.*

## **EPIDEMIOLOGICAL STUDY OF HELICIBACTER PYLORI INFECTION ISOLATED FROM EGYPTION PATIENTS**

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### **Abstract**

*Helicobacter pylori* (*H. pylori*) is the most famous causative agent of stomach ulcer, gastritis, and many gastric malignancies. In Egypt, many researches stated that the prevalence of *Helicobacter pylori* has reached 53% among children and 87.6% among adults. Despite of the mentioned high prevalence rate, there is not enough data neither on the epidemiology of *H. pylori* infection in Egypt nor its evolutionary relation with other strains all over the world. For the last few years, all studies conducted on the Egyptian *Helicobacter pylori* strains concentrated either on virulence genes profiling or antibiotic resistance studies. There are no previous studies that focus on genomic fingerprinting. This study aimed at genomic fingerprinting of selected *Helicobacter pylori* samples isolated from gastric biopsies of Egyptian patients which have high prevalence of cytotoxin-associated gene A (*cagA*), clinically associated with the most severe symptoms, either alone or accompanied with other virulence genes like (*oipA*, *dupA*, *iceA*, & *vacA*) using Pulsed field gel electrophoresis technique and *XbaI* enzyme for the restriction enzyme digestion process. Then we performed whole genome sequencing analysis for two samples that showed the most severe symptoms to

provide a detailed virulome and resistome study that demonstrates the relation between genomic fingerprint and clinical diagnostic signs. In addition, it demonstrates the geographical source of *Helicobacter pylori* infection among Egyptian patients. In conclusion, this study is the first to explain most of the characteristic genomic features related to *H. pylori* strain isolated from Egyptian patients and to define the phylogenetic character of this strain in relation to other strains from different geographic regions.

### **Keywords**

*Helicobacter pylori*, Epidemiology, Virulome, Resistome, Pulsed field gel electrophoresis, Urease test, PCR, Virulence genes, Whole genome sequencing.

## **METAGENOMIC ANALYSIS OF BACTERIAL COMMUNITIES OF THE NASAL CAVITY IN EGYPTIAN INDIVIDUALS AND ITS ASSOCIATION WITH DIFFERENT ENVIRONMENTAL FACTORS**

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### **Abstract**

Microbial communities residing in the nose play important roles in human health and disease. Nasal samples were collected from 19 healthy male subjects: nine samples from persons living in a rural village, and ten samples from ceramic factory workers in a major industrial Egyptian city. The nasal microbiota in the rural sample had higher and distinct diversity compared to industrial samples from workers exposed to pollution daily. Taxonomic analysis of the sequences revealed five major phyla; among these phyla were Actinobacteria, Proteobacteria, Bacteroidetes, and Fusobacteria, revealing significant abundance variation by geographical location. For example, the rural group had a significant increase in representation of Actinobacteria and Bacteroidetes ( $P = 0.004$ ,  $P = 0.01$ , respectively) compared to the industrial group. However, the industrial group showed a significant increase in relative abundance of phylum Proteobacteria ( $P = 0.02$ ). The most predominant genera for the rural group were *Corynebacterium*, *Staphylococci*, *Alliocoeci*, and



Peptoniphilus. By contrast, the industrial group was dominated by Staphylococci, Sphingomonas, and Moraxella. Environmental pollution might alter the nasal microbiome leading to an attendant disturbance in the microbiome community structure. The clinical and public health implications of these nasal microbiome variations by rural and industrialized geography warrant further research. This study contributes to our knowledge of the bacterial composition of nasal microbiome in rural and industrialized geographies, and informs public health, respiratory medicine and occupational health scholarship.

### **Keywords**

*Helicobacter pylori, Epidemiology, Virulome, Resistome, Pulsed field gel electrophoresis, Urease test, PCR, Virulence genes, Whole genome sequencing.*

## **METAGENOMIC ANALYSIS OF HUMAN GUT MICROBIOTA IN PATIENTS WITH COLORECTAL CANCER**

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### **Abstract**

Colorectal cancer (CRC) is the second leading cause of cancer-related death worldwide. It is considered as one of the health care challenges that related to genetic and environmental risk factors. The gut microbiota may create a favorable micro-environment that help in tumor development and progression. This microbiome alterations could be used as biomarkers for early CRC detection and may be a new strategy for its prevention and treatment. Using metagenomics analysis, whole-genome shotgun sequencing (WGS) is becoming more popular. Bioinformatics analysis of metagenomics dataset can reveal bacterial community structure in addition to identification the functions of these microbial communities. This study conducted to reveal the taxonomic and functional analysis of human gut microbiota in healthy individual and patients with CRC.

### **Keywords**

*Colorectal cancer, microbiota, metagenomic, shotgun.*

## MOLECULAR CHARACTERIZATION OF SALIVARY MICROBIOME IN PATIENT WITH *H. PYLORI*

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### **Abstract**

Human Microbiome Project has adopted the term oral microbiome. This project has considered it as the preferable nomenclature to determine the complex oral bacterial community with their genes and environmental interactions which can participate in a disease. The oral microbiota demonstrates a main component of human microbiome which has an important role in human health and disease. The oral microbiome residing in the oral cavity are significant in conducting various physiological processes as digestion and pathogen resistance. In the GIT, bacterial populations exist with high rates of diversity from the mouth to the anus. Saliva contains ten million organisms per milliliter. The colon contains the largest population of organisms, and about a third of the mass of feces is microbes about 100 billion microbes per gram. *Helicobacter pylori* (*H. pylori*) is a gram positive bacterium that inhabits the gastric mucosa and infects more than the half of world population with variable geographical distribution. The acquisition of *H. pylori* infection generally occurs during childhood and can persist life-long without symptoms. Generally, *H. pylori* is assumed to be among the predisposing factors to peptic ulcers, gastric cancer and rarely mucosa-associated lymphoid tissue lymphoma. Recently, the impact of *H. pylori* infection is positively linked not only to gastritis but also extends to be the major contributor of allergies, colorectal cancer, childhood asthma, inflammatory bowel diseases and development of obesity.

### **Keywords**

*Helicobacter pylori*

# THE EFFECTIVENESS OF NEW PROTEINS COCKTAIL AS VACCINE AGAINST STAPHYLOCOCCUS AUREUS BACTEREMIA

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## **Abstract**

The mixture of three peptide Manganese Transport protein C (Mntc), Nickel ABC Transporter, and Phosphatidyl inositol phosphodiesterase is the best combination in Staphylococcus aureus bacteremia model ( balb C ) which indicated by number of survival rate ,Level of IgG , CD4, CD8 and further investigation of histopathology spleen and liver then Phosphatidyl inositol phosphodiesterase then Manganese Transport protein C (Mntc),finally Nickel ABC Transporter.

## **Keywords**

*Staphylococcus aureus, vaccine , Manganese Transport protein C (Mntc), Nickel ABC Transporter, Phosphatidyl inositol phosphodiesterase .*

## **METAGENOMIC ANALYSIS OF BACTERIAL COMMUNITIES ASSOCIATED TO GUT MICROBIOTA IN SMOKER AND OBESSE INDIVIDUALS**

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Pharmacy, Suez Canal University*

### **Abstract**

Gut microbiota play crucial role in host vital metabolic processes, alteration in gut microbiota lead to impairment of some metabolic processes, bacterial populations exist with high rates of diversity from the mouth to the anus. Saliva contains ten million organisms per milliliter. The colon contains the largest population of organisms, and about a third of the mass of feces is microbes about 100 billion microbes per gram. One of the most complex microbial habitats in the human body is the oral cavity. Microorganisms in the oral cavity called oral microflora but recently called oral microbiome. This term was originated by Joshua Lederberg to indicate that the ecological community of commensal, symbiotic, and pathogenic microorganisms.

### **Keywords**

*Correlation, Smoking, Obesity, Metagenomic, Analysis*

## **ASSOCIATION OF TOLL-LIKE RECEPTORS 7 AND 9 GENES SINGLE NUCLEOTIDE POLYMORPHISMS WITH RISK OF SYSTEMIC LUPUS ERYTHEMATOSUS**

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### **Abstract**

Systemic lupus erythematosus (SLE) is a complex autoimmune disease of unknown etiology characterized by the development of autoantibodies to self-antigens. SLE is characterized by manifestations from several organs dominated by skin, joint and renal manifestations, but also from serosal and mucosal surfaces, the hematological system, and the nervous system. Several studies suggest that Toll-like receptors (TLRs) play an essential role in the pathogenesis of autoimmune diseases. TLRs belong to the family of pattern recognition receptors (PRRs) that recognize a wide range of pathogen-associated molecular patterns (PAMPs).

Toll-like receptors (TLRs) constitute an important mechanism in the activation of innate immune cells including monocytes, macrophages and dendritic cells. Macrophage activation by TLRs is pivotal in the initiation of the rapid expression of pro-inflammatory cytokines TNF, IL-1 $\beta$  and IL-6 while promoting Th17 responses, all of which play critical roles in autoimmunity.

Furthermore, Endosomal Toll-like receptors (eTLRs) such as TLR7, 8 and 9, are innate receptors that recognize foreign nucleic acids in order to eliminate

pathogens. In Overreaction of the immune system, as observed during SLE, leads to the recognition of self-DNA and self-RNA by eTLRs conducting to chronic inflammation and sustaining autoreactivity. In view of the possible role of TLR7 and TLR9 in the activation of dendritic cells and autoreactive B cells through RNA- or DNA-related immune complexes. Accumulating evidence supports the idea that TLR7 and TLR9 play important but distinct roles in the development of autoimmune responses SLE.

### **Keywords**

*Toll-like, Polymorphisms, Lupus, Erythematosus*

## **BIOSYNTHETIC POTENTIAL OF MICROBIOTA ASSOCIATED WITH THE MARINE INVERTEBRATES IN RED SEA**

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### **Abstract**

The bacteria associated with marine invertebrates are rich sources of bioactive metabolites. In present study, 443 heterotrophic and morphologically distinct bacterial colonies isolated from ten different marine invertebrates collected from red sea by scuba diving . The isolated strains were cultured in Difco R2A broth and the ethyl acetate culture extracts were screened for their antibacterial potential against four standard microorganisms (Staphylococcus aureus ATCC 25923, Escherichia coli ATCC25922, Pseudomonas aeruginosa ATCC27853 and Candida albicans ATCC 10231. Out of the total of 443 isolates, 70 showed significant antimicrobial activity ,the most potent antimicrobial 14 culture extract were tested for cytotoxic activity using MTT assay on lung and liver cancer the most effective two cytotoxic extract on each cell line were selected for whole genome sequencing of their isolates.

### **Keywords**

*marine bacteria, marine extracts, antitumor, antimicrobial*



# STUDY ON THE FRESHWATER MICROBIOME IN THE SUEZ CANAL AREA USING CULTURE-DEPENDENT AND METAGENOMIC APPROACHES

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## **Abstract**

Fresh water systems need microbial community analysis to monitor the influence of xenobiotic and anthropogenic inputs particularly in urban and industrial settings. Water samples will be collected from various locations spanning different water canals in Ismailia governorate. Locations are selected according to sites of drinking water outlet, Entrance and exit of Al-Muhasmah sewage station and Pollution Monitoring Points. Conventional microbial count will be carried out. Cultures based methods and antibiotic sensitivity testing will be used to measure bacterial load and resistance in water samples between the different locations. Bacterial microbiome will be figured out using Next generation sequencing followed by appropriate computational analysis that analyze the 16S rRNA gene composition.

## **Keywords**

*Freshwater, Culture, Microbiome, Metagenomic, Resistance.*

## **METGENOMIC & PROTEOMIC ANALYSIS OF MARINE WOOD-BORING BIVALVES (SHIPWORMS) FROM RED SEA REGIONS**

**Noha Kafafy<sup>a</sup>, Amro Hanora<sup>b</sup>, Shymaa Enany<sup>b</sup>, Samar Solyman<sup>b</sup>, Yara Shammikh<sup>a</sup>.**

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### **Abstract**

Shipworms play critical roles in recycling wood in the sea. Shipworms and their symbionts are of considerable ecological and economical importance. Symbiotic bacteria supply enzymes that the organisms need for nutrition and wood degradation. Some of these bacteria have grown in pure culture and have the capacity to make many secondary metabolites. However, little is known about whether such secondary metabolite pathways are represented in the symbiont communities within their hosts. In addition, little has been reported about the patterns of host-symbiont co-occurrence. Here, in the present work, we collect shipworms from the Red Sea -El Toor, we are going to apply metagenomics and proteomics sequencing analysis to characterize microbiomes of the gills and digestive tract of shipworms.

### **Keywords**

*Shipworms, symbiotic bacteria metagenomics, proteomics*

# METAGENOMIC DETECTION OF BACTERIAL PATHOGENS IN NASAL SPECIMENS USING HIGH-THROUGHPUT SEQUENCING TECHNOLOGY

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## **Abstract**

Nasal bacterial communities have a significant impact on human health such as *Streptococcus pneumoniae*, *Streptococcus pyogenes*, *Haemophilus influenzae*, and *Ornithobacterium hominis*. *Ornithobacterium hominis* (OH) which is recently detected in 16S rRNA gene surveys. If a mother gets *Ornithobacterium hominis*, there's a risk it will pass on to the baby causing respiratory tract infection. Isolation and whole genome sequencing of *Ornithobacterium hominis* will raise our knowledge of this novel bacteria. The aim of the analysis is to provide a relationship between composition alteration in nasal microbiota and the risk of infection in infants and mothers alongside with the molecular identification of OH.

## **Keywords**

*Ornithobacterium hominis* , *nasal microbiota* , *Shotgun*

# MOLECULAR CHARACTERIZATION FOR WATER NORMAL FLORA AND CELL COUNTING USING FLOW CYTOMETRIC METHOD FOR PHARMACEUTICAL WATER MONITORING

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## **Abstract**

Presence of microorganisms (MOs) in water is the main concern in pharmaceutical industry. It is the first reason for products recall worldwide. So, recently need for rapid and accurate method for quantitation and identification of bacteria is considered a necessity for monitoring Pharmaceutical water quality. Over years, the routine method of determination of the bacterial count in pharmaceutical known as heterotrophic plate count which is too slow requiring days or weeks to approve water quality. The rapid technologies as flow cytometry technology and 16S rRNA gene sequencing used to accelerate microbiological procedures in identification or count Microorganisms.

## **Keywords**

*Heterotrophic plate count, Flow cytometry, 16S rRNA gene sequencing, Pharmaceutical water monitoring.*

## SHOTGUN METAGENOMIC ANALYSIS OF MARINE INVERTEBRATES ASSOCIATED BACTERIAL COMMUNITIES FROM THE RED SEA

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### **Abstract**

Marine invertebrates are well known as a source of drug discovery. The Red Sea has many marine invertebrates that we can explore and many invertebrate-derived metabolites have been produced by the bacteria they have. Nudibranchs is one of the important marine invertebrates that have gained attention in the last decades but there is still poorly report about the chemical potential of their associated microbiome. Those marine nudibranchs are mobile, multicellular invertebrates that host diverse assemblages of microbial organisms and by exploring those nudibranchs associated microbiome, we can discover new bioactive compounds which maybe promising for further research. Using shotgun metagenomic analysis, we would have an insight into community biodiversity and function, unlike the conventional amplicon-based method.

### **Keywords**

*Shotgun, metagenomics, invertebrate, nudibranch, microbiome*

## **APPLICATION OF REVERSE VACCINOLOGY FOR IDENTIFICATION OF POTENTIAL VACCINE CANDIDATES AGAINST STAPHYLOCOCCUS AUREUS.**

**DALIA MAGDY MEGAHD, SAMIRA ZAKEER, SHYMAA ENANY, AMRO SAID HANORA**

*Department of microbiology and immunology, Faculty of pharmacy, Suez Canal University.*

### **Abstract**

Due to the wide spread of antibiotic resistance among *Staphylococcus aureus* strains; the development of another immunotherapies or a protective vaccine against *S. aureus* is highly needed. Conserved, antigenic and surface exposed proteins were predicted in our previous study consider important for primary laboratory testing as vaccine candidates. Their genes were screened in a panel of *S. aureus* isolates. B cell epitopes of another selected protein will be designed and synthesized. The purified peptides and expressed protein will be injected into groups of BALB/c mice and the mice will be challenged with a pathogenic *S. aureus* strain. The protective effect of these antigens will be estimated in different mice groups will be showed in survival analysis testing and the peptide vaccine candidates should elicit functional antibodies that mediate opsonophagocytic killing of *S. aureus*.

### **Keywords**

*Reverse vaccinology, Immuno-informatics, Staphylococcus aureus, B-cell epitopes*

## CHARACTERIZATION OF QUINOLONE RESISTANCE GENES IN UROPATHOGENIC ESCHERICHIA COLI ISOLATES

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<sup>b</sup>Microbiology & Immunology Depart., Faculty of Pharmacy, El-Mansoura University

### Abstract

Fluoroquinolone resistant E. coli isolates, that are also resistant to other classes of antibiotics, is a significant challenge to antibiotic treatment and infection control policies. A significant increase of ciprofloxacin-resistant Escherichia coli has occurred during last years, indicating the need for further analysis. A total of 100 E. coli isolates out of 305 clinical uropathogenic specimens consecutively collected during a year period in El-Mansoura University Hospital, Egypt were studied. Among these isolates 30 E. coli strains were detected as Quinolone resistance isolates by using antimicrobial susceptibility patterns and mechanisms of resistance to quinolones were assessed by detecting the quinolone- resistance genes using PCR techniques. In the present study, 100 (32.7%) E. coli of 305 uropathogenic specimens were tested. Of these isolates 30% were found quinolone resistant and harbouring at least one qnr gene.

This study identified quinolone resistance (qnr) gene I uropathogenic *E. coli* in EGYPT. These finding which suggest a possible resistance to quinolone are of high interest for better management of patients and control of antimicrobial resistance in EGYPT.

### **Keywords**

*Uropathogenic E. coli Infections, Quinolone-Resistant E. coli, Quinolone-Resistance Genes, Fluroquinolone , QNR*



## **ASSOCIATION OF IL-10 GENE POLYMORPHISM ON PATHOGENESIS OF RHEUMATOID ARTHRITIS AND ATOPIC DERMATITIS DISEASES**

**Rahma Mohamed Hussin Atallah<sup>a</sup>, Dr. Samar Mohamed Mansour Solyman<sup>b</sup>,  
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### **Abstract**

Rheumatoid arthritis RA and Atopic dermatitis AD are a chronic inflammatory diseases. This study was conducted to investigate the role of IL-10-1082A/G in the development of RA and AD. A restriction polymerase chain reaction polymorphism (PCR-RFLP) assay was applied to evaluate the polymorphism of IL-10-1082A/G. The results showed There was no association found between the IL10-1082A/G polymorphism and RA and AD in the Egyptian population.

### **Keywords**

*Interleukin-10- rheumatoid arthritis- Atopic dermatitis- Association-  
Polymorphism.*

**THE BIOFILM FORMATION ABILITY AND THE PRESENCE OF DIFFERENT VIRULENCE FACTORS GENES (PSLA, PELA, EXOS, TOXA AND ALGD) AMONG BIOFILM-FORMING STRAINS OF P.AERUGINOSA CLINICAL ISOLATES FROM BURN UNIT IN ISMAILIA HOSPITALS, EGYPT.**

**Rehab Emam Farhan**

*Department of microbiology and immunology, Faculty of pharmacy, Suez Canal University.*

**Abstract**

*Pseudomonas aeruginosa* is considered as foremost cause of hospital acquired infections due to its innate and plasmid mediated resistance to multiple antibiotics making it a multi drug resistant (MDR) pathogen. Biofilm formation is a pathogenic mechanism harbored by this pathogen which further elevates its resistance to antibiotics and host defense system. This study aimed to determine the biofilm formation ability and the presence of different virulence factors genes (PslA, PelA, ExoS, ToxA and AlgD) among biofilm-forming strains of *P.aeruginosa* clinical isolates from burn unit in Ismailia Hospitals, Egypt. In our cross-sectional study, one hundred and twenty six (126) non-duplicate clinical *P.aeruginosa* isolates recovered from 450 clinical specimens from burn unit in Ismailia Hospitals. The antibiotic sensitivity of strong and moderate biofilm producers isolates was done using the disc diffusion method. The isolated bacteria were tested for their ability to form biofilm using a microtiter plate assay. The expression of (PslA, PelA, ExoS, ToxA and AlgD) genes in biofilm producers isolates were detected using PCR.

The 126 isolates of *P.aeruginosa* were tested for their ability to form biofilm using a microtiter plate test method. The MPA detected 80% (95/126) isolates as biofilm producers, 18% (22/126) were strong biofilm producers, 34% (43/126) were moderate biofilm producers, 28% (35/126) were weak biofilm producers and 20% (31/126) non biofilm producers. Susceptibility pattern analysis of biofilm forming *P. aeruginosa* isolates (95) detected that 60% (68/ 95) were multi-drug resistant isolates (MDR). Resistance to all used antibiotics and multidrug resistance was higher among biofilm producing than non-biofilm producing strains, but the difference was statistically non-significant. Investigation of virulence factors associated genes revealed that 96%, 94%, 86.4%, 80.% and 74% of the biofilm producers isolates harboring *algD*, *pslA*, *pel A*, *toxA* and *exoS* gene respectively. The present study confirmed that antimicrobial resistance and virulence genes were more prominent in biofilm-producing *P.aeruginosa* than in non-biofilm-producers.

### **Keywords**

*Biofilm formation, P.aeruginosa, algD, pslA, pel A, toxA and exoS gene.*

## **METATRANSCRIPTOMIC AND METAPROTEOMIC ANALYSIS OF NUDIBRANCHIA**

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### **Abstract**

Marine Nudibranchia have recently known with its production of bioactive compound. Culturing techniques do not provide full overview of the microbial community associated with Nudibranchia which supposed to be the origin of production of bioactive compounds. Metatranscriptomic and Metaproteomic analysis provide wide overview of the gene expression level and proteins framework of genes responsible of production of valuable compound.

### **Keywords**

*Nudibranchia, Metaproteomic Analysis*

**A TRIAL TO DISCOVER THE  
METABOLIC FUNCTIONS OF VAGINAL  
MICROBIOTA IN DIFFERENT HEALTH  
STATES USING WHOLE SHOTGUN  
METAGENOME SEQUENCING**

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**Abstract**

Communities residing in the vagina play important roles in human health and disease. The aim of this study is to provide a correlation between alterations in vaginal microbiota composition and the associated risk of infection. To perform whole shotgun metagenomic sequencing of the DNA extracted from, vaginal swab samples by screening groups of women of different health states for identification and classification of complex vaginal microbial communities and the characterization of novel species. Molecular characterization will include :Genomic DNA extraction of bacterial DNA in vaginal samples to define the microbiota in samples by performing whole shotgun metagenomic sequencing, and bioinformatical analysis of the generated data that include Quality control, Taxonomic assignment and further Downstream analysis.

**Keywords**

*Shotgun metagenomic sequencing, Vaginal microbiota*

## INVESTIGATING THE BACTERIAL GUT MICROBIOME OF DIVERSE EGYPTIAN POPULATIONS

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### Abstract

The human gastrointestinal tract (GIT), major site of nutrient assimilation and micronutrient production, is populated with trillions of microbial cells from all the three domains of life (Archaea, Bacteria and Eukarya). Bacterial species are among gut microbiota which particularly play a crucial role in the digestion of complex dietary polysaccharides by providing several enzymatic functions that are not encoded by the human genome. Healthy immune system and balanced community of the gut microbiota are crucial for human health. Our knowledge on the human gut microbiota is quickly increasing. In a given individual, the microbiota is relatively stable after the first months of life. At the populational level, the microbiota is also supposed to be stable and selected by evolution. However, the commensal microbiota can be qualitatively and quantitatively modulated by the environment where the person lives.

### Keywords

*Gut Microbiota; DNA Isolation; 16S rRNA Sequencing; Bioinformatics*

**METAGENOMIC ANALYSIS OF  
BACTERIAL COMMUNITIES ASSOCIATED  
WITH MARINE INVERTEBRATES WITH  
BIOACTIVE POTENTIAL FROM RED SEA**

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**Abstract**

Marine invertebrates-associated microorganisms were considered to be important sources of marine bioactive products. This study aims to develop a metagenomic analysis of Red Sea marine invertebrates microbiome and a metatranscriptomic protocol to detect the expression of polyketides and nonribosomal peptides in the microbiome of these invertebrates. In this respect , marine invertebrates were collected from Red Sea, DNA was extracted from the collected samples and be ready for shotgun sequencing using NovaSeq 6000 platform to study the diversity and function of the associated bacteria then RNA will be extracted to study the expression of polyketides and nonribosomal peptides in marine invertebrates microbiomes.

**Keywords**

*Nonribosomal peptide synthetase (NRPS); Polyketide synthase (PKS), Marine metagenome, Metatranscriptome*

## **CULTURE-INDEPENDENT CHARACTERIZATION OF HUMAN VAGINAL MICROBIOTA IN HEALTHY EGYPTIAN PREGNANT WOMEN**

**Mariam Emil<sup>a</sup>, Sarah Shabayek<sup>a</sup>, Marwa Azab<sup>a</sup>, Khaled Atwa<sup>b</sup>, Amro Hanora<sup>a</sup>**

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### **Abstract**

The vagina is the shelter of the normal flora which protects against infections caused by pathogenic bacteria, yeast, or the other organisms. Our study aimed for detection of the vaginal microbiota during the pregnancy. A total of 36 vaginal samples were collected from healthy Egyptian pregnant women. Samples were sequenced using Illumina MiSeq technique after amplification of the V3-V4 region of 16S rRNA. *Lactobacillus* was the most predominant species during pregnancy (88%). Also, *L. iners* was found to be the most pervasive species, representing 52% of the vaginal microbiota during pregnancy. This beneficial bacterial flora secretes lactic acid, which protects the vagina from infections by maintaining the acidic pH (< 4.5).

### **Keywords**

*Vaginal microbiota, pregnancy, L. iners.*



**BACTERIOLOGICAL CHARACTERIZATION  
OF ENTEROHEMORRHAGIC ESCHERICHIA  
COLI PRODUCING SHIGA-LIKE TOXIN  
CULTURE-INDEPENDENT  
CHARACTERIZATION OF HUMAN VAGINAL  
MICROBIOTA IN HEALTHY EGYPTIAN  
PREGNANT WOMEN**

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**Abstract**

Shiga toxin-producing *Escherichia coli* (STEC) is a zoonotic food-and water borne pathogen of a serious public health concern .In this study, a total of 135 stool samples from diarrhoeal patients (22-40 years old) suffered acute community diarrhea were collected. Samples from patients were subjected to bacteriological examination for isolation, biochemical identification and serotyping of Shiga toxin-producing *E. coli* ( STEC). The Shiga toxin-producing *E. coli* isolates from clinical sources were tested by using a cytotoxicity assay based on lactate dehydrogenase release from Vero cells.

**Keywords**

*Diarrhea, shiga toxin , E. coli*

**ANALYSIS OF MISSENSE SNPs IN MBL2  
GENE RELATED TO INFECTION  
SUSCEPTIBILITY USING BIOINFORMATICS  
TOOLS**

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**Abstract**

Mannose binding lectin (MBL) is a key molecule in immune system that is responsible for identifying different microorganisms and activating complement cascade leading to phagocytosis and opsonization. Two missense SNPs at codons 54 and 57 were suspected to affect Mannose Binding Lectin function causing increasing susceptibility to infection. Different bioinformatics tools were used to analyze SNPS impact on protein function, stability and structure.

In addition, the locations of the effected amino acids were identified on protein domains. Furthermore, evolutionary conservation of MBL protein sequence was performed. All different methods predicted a damaging effect on MBL protein for both SNPs and these SNPs were found to be suitable to be tested by experimental methods.

## **Keywords**

*Mbl2, polymorphism, infection, sepsis.*

## **MOLECULAR EPIDEMIOLOGY OF COLONIZING GROUP B STREPTOCOCCUS AMONG PREGNANT WOMEN IN PORTSAID, EGYPT**

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### **Abstract**

Group B streptococci, (GBS) are a major cause of invasive neonatal bacterial infections, and vaginal colonization is a major risk. We investigate the serotype distribution of GBS among pregnant women attending in Portsaid. A total of 350 pregnant women at 35-40 weeks of gestation were screened for GBS. High vaginal swabs were collected and incubated in selective enrichment broth for 48hr at 37°C in 5% CO<sub>2</sub> then subcultured on sheep blood agar supplemented with gentamicin and nalidixic acid and on Islam medium. Both beta hemolytic and orange pigmented colonies were confirmed by Latex agglutination test and CAMP test. About 23% of women (80 subjects) were suspected as potential GBS carriers. Further species confirmation using PCR for *cfb* gene still pending.

### **Keywords**

*GBS; colonization; epidemiology; pregnant women; Portsaid.*

## MICROBIOLOGICAL QUALITY OF CERTAIN NON-STERILE PHARMACEUTICAL DROPS PRODUCED IN EGYPT

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### Abstract

The objective of this study is to assess the microbial quality of certain selected brands of non-sterile pharmaceutical drops commonly used in the Egyptian market thus to note the health hazards consumers are exposed to. A total of 360 samples representing 30 brand products of (multivitamin and general tonic, anti-cough and mucolytic and anti-spasmodic and analgesic) non sterile pharmaceutical drops 10 products of each were investigated. For each product, four batches were selected and three containers from each batch were examined microbiologically for their viable aerobic bacterial, coliform and fungal counts. The samples were also examined for the presence of potential pathogens. Quantitatively, there was no viable bacterial growth in 285 (79.17%) of the tested samples whereas the rest of the tested sample 75 (20.83%) contained bacterial count ranged from 10-102 CFU/ml. The results showed that all samples were free from coliform, Staphylococci aureus, Pseudomonas aeruginosa and Salmonella species.

On the other hand 314(87.22 %) of the tested samples were free from fungi, while 46 (12.78%) were contaminated with 10-102 CFU/ml of fungi. Qualitative tests for the presence of hazardous microorganism were including three different bacterial species showed that *Staphylococcus epidermidis*, *Bacillus subtilis*, and *Micrococcus* species. As well as, the fungal contaminants of tested pharmaceutical drops were including four different fungal species as *Aspergillus niger*, *Saccharomyces* species, *Penicillium* species and *Aspergillus flavus*. The nonsterile pharmaceuticals were presumably microbiologically contaminated due to poor handling during dispensing, repackaging, and/or nonadherence to good manufacturing practice. Therefore, training and educating the dispensers, as well as patients, on the proper handling and use of medicines cannot be overemphasized, because these are key aspects in controlling cross-contamination of medicines. Several measures, including equipment automation, monitoring programs and post-marketing surveillance are required to reduce the level of microbial contamination of non-sterile pharmaceutical products.

### **Keywords**

*Microbiological quality, Microbial contamination, potential pathogens, potentially hazardous, Non-sterile pharmaceutical drops.*

## MOLECULAR CHARACTERIZATION OF THE NASAL ASSOCIATED BACTERIAL COMMUNITIES

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### **Abstract**

Communities residing in the nose play important roles in human health and disease. The aim of this study is to provide a correlation between alterations in nasal microbiota composition and the associated risk of infection. To perform whole shotgun metagenomic sequencing of the DNA extracted from, nasopharyngeal swab samples by screening pairs of mother/child samples for identification and classification of complex nasal microbial communities and the characterization of novel species and assembly of new genomes such as OH *Ornithobacterium hominis* (OH), a bacterium that has recently been detected in 16S rRNA gene surveys in the microbiota of nasopharyngeal samples. This bacterium is of growing interest as it frequently colonizes the nasopharynx of a pediatric population with a high-risk of respiratory infection. The genome encodes various antibiotic-resistance genes. Molecular characterization will include :Genomic DNA extraction of bacterial DNA in nasal samples to define the microbiota in samples by performing whole shotgun metagenomic sequencing, and bioinformatical analysis of the generated data that include Quality control, Taxonomic assignment and further Downstream analysis.

### **Keywords**

*Shotgun metagenomic sequencing, Ornithobacterium hominis, nasal microbiota.*

## GENOTYPIC AND PHENOTYPIC STUDIES OF NOSOCOMIAL INFECTIONS OF SOME GRAM NEGATIVE BACTERIA IN INTENSIVE CARE UNITS

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### Abstract

Nosocomial infections are one of the most frequent medical complications affecting patients admitted to the intensive care units because ICUs are settings in which invasive medical interventions may be done for long staying patients which are immune-compromised or have underlying disease that impairs their immunity. The important risk factors for acquisition of infection are invasive procedures such as surgery, intravascular and urinary catheterization and mechanical ventilation of the respiratory tract. The indiscriminate use of antibiotic inside ICUs leads to emergence of high resistant strains. Efflux pump system and Metallo- $\beta$ -lactamase production are important mechanisms of antibiotic resistance also EDTA disk synergy test plays a role in antibiotic resistance among some bacterial isolates. The present study aims to investigate phenotypic and genotypic characteristics of resistance genes among clinical isolates of some Gram negative bacteria isolated from infected patients inside different ICUs.

### Keywords

*Gram negative bacteria, genotypic, phenotypic, Intensive care units, Nosocomial infections.*



## EVALUATION OF ANTIMICROBIAL ACTIVITY OF SULFUR NANOPARTICLES FORMULATIONS AGAINST STAPHYLOCOCCUL ISOLATES FROM ACNE VULGARIS

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### Abstract

Recently, sulfur in nano-sized form has managed to restore the bactericidal activity. Consequently, the present study was conducted to synthesize different formulations of sulfur nanoparticles (SNPs) and evaluate their antimicrobial effect against Staphylococcal isolates from 173 acne patients. Furthermore, molecular analysis of (ermB, mecA) genes distributions. SNPs were chemically synthesized and characterized using different techniques. The results showed small size of (11.7nm) retaining significant bactericidal activities at concentration of 5.5µg/ml accompanied with inhibition zone of 30mm. the prevalence of mecA gene was dominant while ermB gene was infrequent. SNPs are effective treatment for most Staphylococcus bacteria harboring multi-drug resistance.

### Keywords

*Acne vulgaris, Chitosan, Sulfur Nanoparticles, Staphylococcus aureus, Staphylococcus epidermidis*

## PROTEOMIC ANALYSIS OF HUMAN GUT MICROBIOTA IN PATIENTS WITH COLORECTAL CANCER

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### Abstract

Colorectal cancer (CRC) is ranked second in mortality and third in incidence. Environmental factors play major role in causing sporadic CRC. Among environmental risk factors, the intestinal microbiota is an important contributor. Given the importance of gut microbiota in the development of human health and disease, it has been the subject of extensive study. Intestinal microbiota can affect the occurrence of CRC in various ways by promoting sustained inflammation and weakening host immunity. Proteomic research stressed the double effect of the gut microbiota in tumorigenesis (either inhibit cancer or promote cancer). Liquid chromatography-mass spectrometry (LC-MS) is even more widely used for the analysis of both non-polar/ polar metabolites and proteins. LC-MS employs softer ionization and lower temperature than GC-MS, making it more suitable for larger, non-volatile, and less stable metabolites and proteins.

### Keywords

*Colorectal cancer, microbiota, proteomic*

## EPIDEMIOLOGY OF NON-LACTOSE FERMENTING *E. COLI* IN EGYPT

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### Abstract

*E. coli* is the most common and predominated bacteria causing UTIs in human beings. non- lactose fermenting isolates have been reported in labs with no abundant clinical distinctions. *E. coli* lac- strains might possess many virulence factors and antibiotic resistant elements which may be useful for clinical discrimination them from *E. coli* lac+ strains. Out of n=112 positive urine samples, 6 lac- *E.coli* strains were isolated. All strains show significant resistance to many different antibiotics in clinical use and may cause recurrent infection, which is alarming for predicted both misdiagnosis and mistreatment of these interesting strains.

### Keywords

*E. coli* · *Lactose non-fermenting* · *Urinary tract infections* · *Epidemiology*

## THE RELATION BETWEEN RUNX3 GENE & P16 GENE METHYLATION IN PLASMA AND HEPATOCELLULAR CARCINOMA PROGNOSIS

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### Abstract

Hepatocellular carcinoma is the most common hepatic malignancy. RUNX3 & P16 are tumor suppressor genes were inactivated by hypermethylation which is epigenetic mechanism of progression of HCC. The aim of this study was to assess the association of hypermethylation of RUNX3 & p16 genes with the incidence of HCC in Egyptian patients. Study included 120 subjects: 30 HCC, 30 HCV, 30 cirrhotic patients, and 30 healthy. MSP was done for detection hypermethylated p16 and RUNX3. AFP was measured in serum by ELISA. The methylation state of both RUNX3 and P16 genes was significantly higher in HCC patients compared to the control ( $P = 0.016$ ,  $OR = 4.38$ ) & ( $P = 0.014$ ,  $OR = 4.97$ ) respectively. Hypermethylation of RUNX3 and p16 is associated with the development of HCC.

### Keywords

*RUNX3, p16, Hepatocellular carcinoma, Methylation.*

## LEVELS OF BIOLOGICAL MARKER IN DIFFERENT STAGES OF COVID-19 INFECTION

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### **Abstract**

Corona virus Disease 2019 (COVID-19) is a threat for human kind and causes a relative high mortality. The disease severity is characterized by the over activation of the immune system causing a cytokine storm responsible for cytokine release syndrome(CRS) that may spread systemically, leading to acute respiratory distress syndrome (ARDS) and multiple organ failure. Cumulative evidence supports that some hormones can regulate the immune response via interaction with various cytokines (e.g., interferons) and immune cells such as T lymphocytes, macrophages, and bone marrow cells. These cytokines , produced by macrophages and lymphocytes, have been implicated in cytokine storm which has been recognized as one of the major causes of ARDS and multiple organ failure.

### **Keywords**

*CRS, ARDS.*

## **RELATION OF STAT3 GENE POLYMORPHISM WITH miR-452-3P IN EGYPTIAN OSTEOARTHRITIS PATIENTS IN SUEZ CANAL AREA**

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*Biochemistry Department, Faculty of Pharmacy, Suez Canal University*

### **Abstract**

Previous studies have reported that STAT3 dysfunctional pathway is associated with a dysregulated inflammatory response in osteoarthritis (OA). MicroRNAs (miRNAs) are receiving growing attention being frequently dysregulated in various pathological conditions, including OA. Recently, it has been documented that miR-452-3p is overexpressed in hepatocellular carcinoma promoting cell proliferation and mobility and suppressing apoptosis.

### **Keywords**

*STAT3, MiRNA452-3p, RT-PCR, rs1053005.*

## **NON-ALCOHOLIC FATTY LIVER DISEASE: GENETIC VARIATIONS OF MIRNA-122 EXPRESSIONS IN THE EGYPTIAN PATIENTS WITH NAFLD**

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### **Abstract**

Nonalcoholic fatty liver disease (NAFLD) is a pathological condition characterized by the macrovesicular accumulation of triglycerides within hepatocytes (hepatic steatosis); in a number of cases a wide spectrum of

histopathological abnormalities ranging from simple steatosis to nonalcoholic steatohepatitis (NASH) with or without fibrosis furthermore, cirrhosis and liver failure may occur in 20% to 25% of affected individuals

## **Keywords**

*NAFLD; Biomarker; Micro RNA 122*



## ROLE OF SELENIUM NANOPARTICLES IN TREATMENT OF VANCOMYCIN INDUCED NEPHROTOXICITY IN EXPERIMENTAL RATS

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### Abstract

The present study aimed to investigate the ability of selenium nanoparticles (SeNPs) to protect against VCM-induced nephrotoxicity in rats. Levels of malondialdehyde (MDA), inducible nitric oxide synthase (iNOS), nitric oxide (NO), tumor necrosis factor-alpha (TNF- $\alpha$ ), and kidney injury molecule-1 (KIM-1) were significantly increased in kidney tissue after VCM administration, while the antioxidant enzymes were decreased in kidney in the VCM-treated rats compared to the normal control group. Treatment with SeNPs significantly decreased levels of MDA, iNOS, NO, TNF- $\alpha$ , and KIM-1 in the kidney tissue. Administration of SeNPs also enhanced the activities of the antioxidant enzymes in kidney. In conclusion, SeNPs alleviated VCM-induced nephrotoxicity by their anti-oxidant and anti-inflammatory effects.

### Keywords

*Vancomycin; Selenium nanoparticles (SeNPs); anti-oxidant; anti-inflammatory.*

## **SODIUM GLUCOSE CO-TRANSPORTER-2 INHIBITION AS CANDIDATE THERAPEUTIC OPTION FOR BRAIN DEGENERATION INDUCED IN RATS**

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### **Abstract**

Empagliflozin, SGLT-2 inhibitor, has been used as anti-diabetic medication. It can alleviate neuronal damage through glycemic control and related antioxidant, anti-inflammatory, and antiapoptotic effects. This study aims to evaluate the therapeutic effect of empagliflozin either individually or in combination with pirfenidone on Parkinson's disease (PD) in fructose-fed rats. 50 Wistar male rats will be equally assigned into 5 groups; normal control rats, fructose –fed rats, fructose-fed rats treated with empagliflozin, fructose –fed rats treated with pirfenidone, fructose –fed rats treated with empagliflozin and pirfenidone. Metabolic syndrome parameters will be measured spectrophotometrically. Markers of inflammation and PD pathology will be analyzed by ELISA and western blot. Histopathological examinations of brain will be performed. Results will be statistically analyzed.

### **Keywords**

*Empagliflozin; pirfenidone; SGLT-2; Parkinson's disease.*

## **ANTI-OXIDANT AND ANTI-INFLAMMATORY EFFECTS OF LIPOPOLYSACCHARIDE FROM RHODOBACTER SPHAEROIDES AGAINST ETHANOL-INDUCED LIVER AND KIDNEY TOXICITY IN EXPERIMENTAL RATS**

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### **Abstract**

This study aimed to investigate the protective effects of lipopolysaccharide from *Rhodobacter sphaeroides* (LPS-RS) against ethanol-induced hepatotoxicity and nephrotoxicity in experimental rats. The study involved a normal control group, LPS-RS group, two groups were given ethanol (3 and 5 g/kg/day) for 28 days, and two other groups (LPS-RS + 3 g/kg ethanol) and (LPS-RS + 5 g/kg ethanol) received a daily dose of LPS-RS (800 µg/kg) before ethanol. Ethanol significantly increased the expression of nuclear factor kappa B (NF-κB) and levels of malondialdehyde (MDA), tumor necrosis factor-alpha (TNF-α) and interleukin-6 (IL-6) in the liver tissue and decreased the anti-oxidant enzymes. Hepcidin expression was down-regulated in the liver, with increased serum levels of ferritin and iron. Prior-administration of LPS-RS alleviated the increase in oxidative stress and inflammatory markers,

and preserved iron homeostasis markers. In the kidney, administration of ethanol caused significant increase in the expression of NF- $\kappa$ B and the levels of TNF- $\alpha$  and kidney injury markers; whereas LPS-RS + ethanol groups had significantly lower levels of those parameters. In conclusion; this study reports anti-oxidant, anti-inflammatory and iron homeostasis regulatory effects of the toll-like receptor (TLR4) antagonist LPS-RS against ethanol induced toxicity in both the liver and the kidney of experimental rats.

### **Keywords**

*Alcoholic liver disease; hepcidin; kidney injury molecule-1; lipopolysaccharide from Rhodobacter sphaeroides; nuclear factor kappa B; toll-like receptor 4.*

## **NOVEL ADIPOKINES AND THE RISK OF OBESITY-RELATED BREAST CANCER**

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### **Abstract**

Breast cancer is the leading cause of cancer death among women. Obesity is linked to an increased risk of breast cancer. In recent studies, the prominence of the triad of overweight/obesity, insulin resistance, and adipokines in cancer has been highlighted. Among these adipokines are vaspin and omentin-1. Vaspin is well recognized for its insulin-sensitizing properties, modulatory role in glucose tolerance, and anti-inflammatory effects. Omentin-1 improves insulin sensitivity and has been linked to a lower risk of obesity, along with a potential role as a tumor suppressor in cancers such as prostate, liver, colorectal, and pancreatic cancer. To the extent of our knowledge, there are few studies regarding the association of vaspin and omentin-1 gene polymorphisms with breast cancer risk.

### **Keywords**

*Adipokines; Breast cancer; Insulin resistance; Obesity.*

## **STUDY OF MICRORNA- 224 GENE EXPRESSION AND POSSIBLE CORRELATION WITH SERUM LEPTIN LEVELS AND ITS GENETIC POLYMORPHISM IN TYPE 2 DIABETES MELLITUS EGYPTIAN PATIENTS**

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### **Abstract**

Type 2 diabetes mellitus (T2DM) is a major public health concern facing the world today. It is a complex disease involving both environmental and genetic contributing factors. Recent evidence suggests that the incidence of T2DM in young adults is increasing worldwide. T2DM patients with an early onset have a longer disease duration and exposure to adverse risk factors, leading to diabetes-related complications with significant morbidity and mortality. Leptin is a plasma protein secreted by adipocytes. The genetic variants in leptin and leptin receptor gene (LEPR) may play major role in the pathogenesis of T2DM and obesity. MicroRNA-224 is readily detectable in urine of individuals with diabetes mellitus and is a potential indicator of beta-cell demise.

### **Keywords**

*leptin gene- Diabetes -Polymorphism-Obesity-MicroRna.*

## **HYPOTHYROIDISM AFFECT PROGRESSION AND WORSE OUTCOMES OF BREAST CANCER BUT NOT OVARIAN CANCER**

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### **Abstract**

Some studies suggest that thyroid hormones and disorders can influence breast (BC) and ovarian (OC) cancers risks. However, studies regarding their effect on these tumors progression are limited. Thyroid-stimulating hormone (TSH), T4, free T4 (FT4), T3, and free T3 (FT3) were detected in patients with BC, OC, benign breast and ovary diseases, and healthy controls using highly sensitive chemiluminescence assay. In contrast to OC, hypothyroidism prevalence was associated with BC late stage (11/24 vs. 2/46), high grade (11/23 vs. 4/ 47), lymph node invasion (11/42 vs. 0/28), positive distant metastasis (11/25 vs. 1/45), and large tumor size (14/25 vs. 1/45) compared to tumor early stages, low grades, negative lymph node, and distant metastasis and small size, respectively. Patients with late stage, high grade, large tumor size, positive lymph nodes, or positive distant metastasis were significantly ( $P < 0.05$ ) associated with elevated levels of TSH and

decreased levels of T4, FT4, T3, and FT3. There were both significant positive correlation of serum TSH and significant inverse correlation of T4, FT4, T3, and FT3 with these tumor worse outcomes. In conclusion, our results identify hypothyroidism as potentially important prognostic factor in BC not in OC that is associated with poor outcomes of BC patients.

### **Keywords**

*Breast cancer; ovarian cancer; hypothyroidism; progression; worse outcomes.*



## PREVALENCE OF OCCULT HEPATITIS C VIRUS INFECTION IN EGYPTIAN PATIENTS WITH LYMPHOMA

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### Abstract

The goal of this study is to determine the prevalence of occult HCV infection in Egyptian lymphoma patients, to demonstrate the value of HCV RNA testing as an alternative to liver biopsy, and to focus on the remarkable changes in various lab parameters in lymphoma patients with occult HCV. Several studies have found a link between occult HCV infection (OCI) and lymphoproliferative disorders. This relationship was confirmed in this study, which found six positive cases among 100 lymphoma patients. According to the findings, all of the patients with occult hepatitis C had non-Hodgkin's lymphoma. The study also discovered a significant increase in the levels of aminotransferase enzymes in patients confirmed with OCI when compared to patients without OCI.

### Keywords

*Lymphoma, Occult, HCV*

## POSSIBLE RELATION BETWEEN DIABETES AND IMMUNOGENIC GENE POLYMORPHISMS

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### Abstract

Diabetes mellitus is a vastly prevalent metabolic disorder with escalating global health concerns. Assigning a type of diabetes to an individual often depends on the circumstances present at the time of diagnosis, with individuals not necessarily fitting clearly into a single category. For example, some patients cannot be clearly classified as having type 1 or type 2 diabetes. CIITA is a human gene which encodes a protein called the class II, major histocompatibility complex, Mutations in this gene are responsible for the bare lymphocyte syndrome in which the immune system is severely compromised and cannot effectively fight infection. CIITA gene variants ( Rs8048002) gene polymorphism was reported to be associated with rheumatoid arthritis in Scandinavian populations .C-type lectin domain family 2 member D is a protein that in humans is encoded by the CLEC2D gene. Rs2114870 gene polymorphism was reported to be associated with primary adrenal insufficiency. as it related to immune system and many studies proved that so I suggested that it relates to diabetes type 1.

### Keywords

*PCR analysis, CLEC2D gene*

## **ASSOCIATION BETWEEN MICRORNAs EXPRESSION PROFILE AND THE EARLY DIAGNOSIS AND PROGNOSIS OF COLORECTAL CANCER IN EGYPTIAN PATIENTS**

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### **Abstract**

Colorectal cancer (CRC) is one of the most common gastrointestinal malignancies threatening the lives of millions around the world. There is urgent need to search for reliable biomarkers that could assist in early diagnosis, prognosis and staging of various CRC categories. The study aims to examine the association of miR-373, miR499-5p and miR-598 expression with the early diagnosis, staging and prognosis of various CRC. Plasma miRNAs expressions in 200 samples (50 healthy, 150 of different stages of colorectal cancer) were quantified using RT-PCR. The findings of this study will show that miR 373 and mir 499-5p have an oncogenic role in human colorectal cancer metastasis, while mir 598 inhibits colorectal cancer migration and invasion. Finally, the miRNAs identified could be used as prospective and sensitive biomarkers for the staging, prognosis, and early detection of CRC.

### **Keywords**

*microRNAs expression, colorectal cancer, Early diagnosis, prognosis*

## ASSOCIATION OF ALDOSE REDUCTASE GENE POLYMORPHISMS WITH PROTEIN KINASE C IN EGYPTIAN PATIENTS WITH DIABETES MELLITUS

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### Abstract

The study assessed the association of rs759853 (-106C→T/-12C→G) ALR gene polymorphisms with diabetic mellitus(DM). One hundred of diabetic patients and 100 of healthy human were investigated. ALR (-106C→T/-12C→ G) SNPs were genotyped using PCR-RFLP. Human protein kinase C (PKC) levels were measured using ELISA technique. Our data indicated a significant difference in both allele frequencies of rs759853 (-106C→T) and (-12C →G) between diabetic patients and control groups (P < 0.001 and P = 0.02). Carriers of major allele of (-106C→T) and minor allele of (-12C →G) gene polymorphisms were associated with higher PKC, RBC, TG, TC, LDL-c and lower HDL-c levels than the carriers of other alleles. ALR (-106C→T) and (-12C →G) gene polymorphisms are associated with DM.

### Keywords

ALR, PCR -RFLP, diabetes mellitus, protein kinase C, ELISA.

# THERAPEUTIC EFFECTS OF L-DOPA AND/OR VITAMIN E AND B COMPLEX SUPPLEMENTS ON EXPERIMENTALLY-INDUCED PARKINSON'S DISEASE IN RATS: A NEW INSIGHT INTO THE ROLE OF HIGH MOBILITY GROUP BOX 1

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## **Abstract**

Parkinson's disease (PD) is the second most common neurodegenerative disease in the elderly, which is clinically characterized by bradykinesia, resting tremor, abnormal posture balance, and hypermyotonia. Neuroinflammation, autophagy impairment, alpha-synuclein aggregation, and mitochondrial dysfunction may contribute to PD onset. However, the molecular mechanisms underlying these pathophysiological processes are still under elucidation. Recent evidence has indicated that high-mobility group box 1 (HMGB1) may play a key role in PD pathogenesis. It has been shown to participate in neuroinflammation, modulate autophagy and apoptosis, and regulate gene transcription. Currently, dopamine replacement therapy using L-dopa, dopamine receptor agonists and other agents is established as a gold standard of treatment for PD. Numerous clinical studies as well as animal and cell experiments have found a certain relationship between the vitamin family and PD. The antioxidant properties of vitamins and their biological functions of regulating gene expression may be beneficial for the treatment of PD. Current clinical evidence indicates that proper supplementation of various vitamins can reduce the incidence of PD in the general population, improve the clinical symptoms, and may thus be an effective adjuvant treatment for PD. Nevertheless, the safety of regular vitamin supplements still needs to be highlighted.

## **Keywords**

*HMGB1, Parkinson's disease, vitamin E and B complex*

## **PYRVINIUM PAMOATE PROTECTS AGAINST CYCLOSPORINE HEPATOTOXICITY VIA MODULATION OXIDATIVE STRESS**

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### **Abstract**

Cyclosporine A (CsA) is used for the treatment of autoimmune diseases . Pyrvinium pamoate (PP) was approved for its anthelmintic properties. The aim of this study was to discover if PP could protect against CSA-induced hepatotoxicity. group 1: control, groups 2 to 4 were subjected to daily CsA (25 mg/kg, i.p), Group 3 and 4 were treated with graded dose of PP (0.25, 0.5mg/kg) and group 5 were treated with PP (0.5 mg/ kg). CsA caused a significant increase in the liver enzymes and malondialdehyde levels. While, the levels of glutathione were decreased in CsA-treated group. CsA-induced changes in the mentioned parameters which were reduced by PP, indicating its antioxidant properties. PP may be considered a promising agent to prevent CsA hepatotoxicity.

### **Keywords**

*Pyrvinium pamoate, Hepatotoxicity, Oxidative stress*

## **ROLE OF SILDENAFIL AND SELENIUM IN HIND LIMB ISCHEMIA**

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### **Abstract**

Sildenafil is widely used in humans for treating vascular diseases. Selenium is involved in various processes together with antioxidant defense and immune functions. The aim of this study was to investigate whether pharmacological pre-conditioning with the PDE5 inhibitor and nano-selenium might, through their angiogenic and anti-oxidant effect in lower limb ischemia in diabetic rats. Group 1: control, groups 2 & 3 were subjected to patterned dose of Sildenafil (20 mg/kg, i.p.) & nano-selenium (0.1 mg/kg, orally). From group 4 to 7, STZ (60 mg/kg, i.p.) was served in addition to treatment drugs. Combined treated rats retained normal levels of NO with high VEGF expression, showed reduced levels of muscular deformation and oxidative stress.

### **Keywords**

*Sildenafil, Selenium, STZ, Angiogenesis, Diabetes*

## **INVESTIGATION OF ANTI-EPILEPTIC EFFECT OF PIOGLITAZONE IN PENTYLENETETRAZOLE (PTZ) INDUCED KINDLING MODEL IN MICE**

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Russian University, Cairo, Egypt*

### **Abstract**

Disturbance of glucose metabolism, nerve growth factor (NGF) and m-TOR signaling have been implicated in the pathogenesis of epilepsy. Pioglitazone (PGZ) is an anti-diabetic drug which found to have a role in neurodegenerative diseases including epilepsy. This study aimed to investigate the neuroprotective effect of PGZ in pentylenetetrazole (PTZ) kindled seizure in mice. Results showed that PTZ group showed significant rise in seizure score, m-TOR markers and NGF along with histological abnormalities compared to normal. Treatment with PGZ showed a significant decrease in previous parameters compared to PTZ group. This suggests antiepileptic mechanism of PGZ in targeting epileptogenesis and epilepsy.

### **Keywords**

*Epilepsy, Pioglitazone, Pentylenetetrazole, m-TOR, Glucose metabolism*



## **DOXEPIN PROTECTS AGAINST CISPLATIN INDUCED NEPHROTOXICITY VIA MODULATION OF INFLAMMATORY RESPONSE**

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### **Abstract**

Nephrotoxicity has been recognized as an important obstacle towards cisplatin(CP) clinical utilization. Doxepin(DOX), was shown to confer an anti-inflammatory effect. Rats were divided into 6 groups: Group1; Control, Group6; DOX 20 only treated, while Groups(2-5); were received DOX(5, 10 and 20 mg/kg, ip) once daily for 10 consecutive and were also co-administrated with single dose of CP(10mg/kg.ip) at the day 7 day of the experiment. Eventually, rats were sacrificed, their kidney were dissected out, and processed for biochemical studies. Dox in a dose dependent manner significantly ameliorated the alternated renal function tests and the elevation of inflammatory cytokines mediated by CP. DOX nephroprotective impact of Dox could be mediated by reducing inflammatory cytokines.

### **Keywords**

*Cisplatin, Nephrotoxicity, Doxepin, inflammation*

## THE IMPACT OF DAPAGLIFLOZIN ON ALZHEIMER'S DISEASE IN RATS

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### Abstract

Alzheimer's disease (AD) is a neurodegenerative disease characterized by cognitive decline. Dapagliflozin, a SGLT2i, maybe able to diminish that injury so this study aims to evaluate the influence of Dapagliflozin administration against aluminum-induced neurotoxicity that mimics AD in rats. Four groups of rats were used. Behavioral experiments were performed, histopathological changes in the brain and biochemical changes were established.

### Keywords

*Alzheimer's disease, Dapagliflozin, Neurotoxicity*

## EFFECT OF ETANERCEPT ON Cd CHLORIDE-INDUCED TESTICULAR DAMAGE IN RATS

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### Abstract

One of the negative consequences of cadmium exposure is testicular injury. Etanercept's therapeutic activity against cadmium-induced testicular damage, as well as probable underlying mechanisms, were investigated in this study. Sixty rats were divided into six groups: normal, CdCl<sub>2</sub> control (7 mg/ kg i.p.), and CdCl<sub>2</sub> treated with etanercept (5,10,15 mg/kg s.c.) respectively and etanercept only (15 mg/kg SC). CdCl<sub>2</sub> reduced serum testosterone, testicular GSH, CAT, and SOD. However, it elevated the levels of MDA in the testes. Cadmium increased levels of inflammatory biomarkers like TNF- $\alpha$ , i-NOS, and NF- $\kappa$ B. Etanercept relieved the previous toxic effects induced by CdCl<sub>2</sub>. In conclusion, etanercept provides potential therapeutic approach to treat testicular tissue from the damaging effects of Cd by reducing oxidative stress and inflammation.

### Keywords

*Testicular damage, Cadmium, inflammation, oxidative stress, Etanercept*

## **ROLE OF CANAGLIFLOZIN IN AMELIORATION OF AUTISM SPECTRUM DISORDER-ASSOCIATED BEHAVIORS**

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### **Abstract**

Valproic acid (VPA) is one of the major medication for all types of epilepsy despite that, it resulted in a lot of adverse effects including autism like behavior. Autism spectrum disorder (ASD) is a complex neurodevelopmental and pervasive disorder. There are currently no treatments approved by FDA for the core impairments of ASD. Therefore, the current study was conducted to examine the effect of canagliflozin, sodium glucose co-transporter 2, at oral dose (5, 7.5 & 10mg) on developmental and behavioral changes caused by VPA. Autism was induced through injection of VPA (300mg/kg) to rat pups on PND 2, 3 & 4. The present study concluded that canagliflozin had strong effect in ameliorating autism like behavior and developmental change of VPA.

### **Keywords**

*VPA- Canagliflozin – Autism*

## **EFFECT OF ROSIGLITAZONE ON BRAIN GLUCOSE METABOLISM AND mTOR ACTIVITY IN ANIMAL MODEL OF DEPRESSION**

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### **Abstract**

Major depression disorder (MDD) is a global disease. The excess glucocorticoid produces features of depression. Rosiglitazone is an antidiabetic agent that shows antidepressant effect. Dexamethasone used to induce MDD, mice have distributed into groups: control, untreated, Rosi10 and Rosi30. Nerve growth factor downregulated in depression and turned to normal by treatment. Adenosine monophosphate-activated protein kinase (AMPK) regulate the activity of protein kinase B (AKT), mitogen-activated protein kinases (MAPK), and mammalian target of rapamycin complex 1 (mTORC1) that essential in treatment of depression. Rosiglitazone increase AMPK and AKT. Rosiglitazone downregulates activity of mTOR, pMAPK, 4E-BP1 in brain. Rosiglitazone, an AMPK activator, lower the expression of mTOR/MAPK/4EBP1 receptors and reverses depressive-like behavior. Rosiglitazone potentials pharmacological action for management of MDD

### **Keywords**

*Depression, rosiglitazone, mTOR, glucose metabolism*

## TRIMETAZIDINE EFFECT IN BREAST CANCER

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### Abstract

Trimetazidine (TMZ) inhibits  $\beta$ -oxidation of fatty acids by block 3-keto-acyl-CoA thiolase (3-KAT inhibitor). The aim of this study is to discover if TMZ could have activity against breast cancer. group 1: control, groups 2,3 and 4 were administered daily TMZ (10-30 mg/kg, orally) after exposure to EAC. TMZ showed fatty acid oxidation (FAO) inhibition properities, indicating its anti-tumor properties. TMZ may be considered as a promising anti-tumor agent.

### Keywords

*Trimetazidine, Breast cancer, Fatty acid oxidation inhibition.*

## GREEN DETERMINATION OF SOME THERAPEUTIC DRUGS IN DIFFERENT MATRICES USING ADVANCED ANALYTICAL TECHNIQUES

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### Abstract

Green Analytical Chemistry (GAC) reviews the main strategies for making analytical methods greener. Several protocols can be followed for this aim including replacing ecologically hazardous solvents by more safe ones, minimizing sample preparation and handling, reduction of solvent and reagent consumptions, reduction of energy consumption and minimization of waste. All such protocols aimed at avoiding or reducing the undesirable environmental side effects of chemical analysis, while preserving the accuracy, sensitivity, selectivity and precision of the analytical methodologies. The economic aspects of green analytical chemistry (GAC) should be considered since most of scientific literature users are based into profit gaining facilities such as pharmaceutical companies, therefore the opportunities for management costs are their main goals.

### Keywords

*green analytical chemistry*

# GREEN, ENVIRONMENT FRIENDLY DENSITOMETRIC HPTLC METHOD FOR SIMULTANEOUS DETERMINATION OF ANTIVIRAL DRUGS IN THEIR PHARMACEUTICAL DOSAGE FORMS

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## Abstract

Recently, the analytical community has increasing interest in developing more environment-friendly practices by eliminating or reducing hazardous chemicals and solvents usage which are extremely dangerous to human health and environment. In this study, a simple, rapid, inexpensive and eco-friendly HPTLC with densitometric detection method was designed, optimized and validated for the simultaneous determination of the newly antiviral co-formulated drugs SOF and LED in pure powder and combined pharmaceutical formulation.

## Keywords

*Green, Eco-scale, HPTLC, Antiviral*



## **SIMULTANEOUS ESTIMATION OF RECENTLY FDA APPROVED CO-FORMULATED OPHTHALMIC SOLUTION BENOXINATE AND FLUORESCEIN: APPLICATION TO AQUEOUS HUMOR**

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### **Abstract**

Nine simple, cost-effective, and sensitive spectrophotometric methods were developed to simultaneously assay benoxinate HCl and fluorescein sodium in their co-formulated eye drops. A direct UV spectrophotometric method was developed for their FLU assay at 481 nm over the concentration range of 0.6–10.0  $\mu\text{g mL}^{-1}$ . Meanwhile, BEN was assayed over the concentration range of 1.0–25.0  $\mu\text{g mL}^{-1}$  by different UV based methods, namely, conventional dual-wavelength method, first derivative spectrophotometry, second derivative spectrophotometry, ratio spectra difference spectrophotometry, the first derivative of ratio spectra, ratio subtraction method, isosbestic point method (ISP) and absorption factor method.

### **Keywords**

*Benoxinate, fluorescein, simultaneous analysis.*

## **GREEN ANALYTICAL STUDY OF SOME DRUGS CONTAINING NITROGEN HETEROCYCLIC MOIETIES.**

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### **Abstract**

The aim of the proposed study is to develop modern and novel techniques for the estimation of some drugs containing nitrogen heterocyclic moieties in their pharmaceuticals and biological fluids. The developed methods will be validated according to ICH guidelines. Moreover, the data obtained by the proposed techniques will be statistically evaluated and compared with pharmacopeial or reference methods. The work course will be aided by the utilization of chemometric methods to help improving the performance of the developed methods, then these methods will be applied to ensure the proposed drugs stability under variety of stress conditions as recommended by ICH guidelines.

### **Keywords**

*Green - Analysis - Nitrogen - Heterocyclic*

## **ANALYTICAL STUDY OF SOME DRUGS USED IN THE TREATMENT OF VIRAL INFECTION**

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### **Abstract**

The aim of the proposed study is to develop modern and novel techniques for the estimation of some drugs used for the treatment of viral infection in their pharmaceuticals and biological fluids. The developed methods will be validated according to ICH guidelines. Moreover, the data obtained by the proposed techniques will be statistically evaluated and compared with pharmacopeial or reference methods. The work course will be aided by the utilization of chemometric methods to help improving the performance of the developed methods, then these methods will be applied to ensure the proposed drugs stability under variety of stress conditions as recommended by ICH guidelines.

### **Keywords**

*Analytical – Drugs- Treatment – Viral*

## DEVELOPMENT AND VALIDATION HPTLC METHOD FOR THE DETERMINATION OF LEDIPASVIR AND SOFOSBUVIR IN TABLET DOSAGE FORM

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### **Abstract**

A new, simple, precise, accurate and selective high-performance thin-layer chromatographic (HPTLC) method has been developed and validated for the simultaneous determination of ledipasvir and sofosbuvir in their tablet dosage form. Chromatographic separation was ethyl acetate:hexane:methanol in the ratio of 8:1.25:0.75 (% v/v) as the mobile phase followed by densitometric measurement at 256 nm. The calibration curve was found to be linear between 60 to 1980 and 45 to 3600 ng/ band for ledipasvir and sofosbuvir, respectively, with significantly high value of regression coefficient ( $r^2 > 0.9999$ ) with linear and homoscedastic residuals. The limits of detection and quantification were found to be 16.5 and 50 ng/band, respectively, for ledipasvir and 13 and 39.5 ng/band, respectively, for sofosbuvir.

### **Keywords**

*HCV. HPTLC. Ledipasvir. Sofosbuvir. MPIVIROPACK PLUS*

## **DETERMINATION OF SOME ANTIMICROBIAL DRUGS IN THE BIOLOGICAL FLUIDS AND PHARMACEUTICAL FORMULATIONS**

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### **Abstract**

The proposed work aims to develop new methods for the analysis of some antimicrobial drugs such as drugs that used for COVID 19 in biological fluids and pharmaceutical formulations. There is still a need to elaborate feasible, simple and accurate analytical methods for their determination in the biological fluids and pharmaceutical preparations and also developing some selective stability-indicating methods for their in pharmaceutical formulations using different advanced instrumental techniques such as spectrophotometry, voltammetry, UHPLC-MS/MS, HPLC-PDA and capillary electrophoresis. All the results will be statistically evaluated and compared with those obtained by official, reference or comparison methods whenever needed.

### **Keywords**

*Antimicrobial; Antiviral; Voltammetry; Drug-Drug interaction; HPLC.*

## VALIDATION OF UPLC- MS/MS METHOD FOR DETERMINATION OF $\beta$ -SITOSTEROL AND FERULIC ACID IN PYGEUM AFRICANUM EXTRACT

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### Abstract

A novel liquid chromatography–electro spray ionization–tandem mass spectrometry (LC–ESI–MS/MS) for determination of  $\beta$ -Sitosterol and Ferulic acid in Pygeum africanum extract used for treatment of benign prostatic hyperplasia. The analytes was performed on an ACQUITY UPLC H-Class system coupled with Xevo TQD mass spectrometer and HSS T3 C18 column (1.8  $\mu\text{m}$  x 2.1, 50 mm). Mobile phase A was 0.1% formic acid in water and mobile phase B was 0.1% formic acid in Methanol with a gradient elution mode. The UPLC–MS/MS parameters were optimized in the positive and negative ionization mode using electro spray ionization source. The quantification performed using multiple reaction monitoring transitions. The method was validated as per Food and Drug Administration guidelines.

### Keywords

*Pygeum;  $\beta$ -Sitosterol; Ferulic acid; UPLC.*

# DETERMINATION OF BUTYLATED HYDROXYL TOLUENE IN FOOD BY HIGH PERFORMANCE LIQUID CHROMATOGRAPHY USING EXPERIMENTAL DESIGN

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## Abstract

Antioxidants are food additives used to slow the process of rancidity .BHT is commonly used antioxidant. Analytical method which is capable to measure each one of antioxidant or mixture of antioxidants simultaneously is necessary. This goal of the study is to obtain analytical method for determination of BHT by HPLC using experimental design in food items by using column C18 (4.6 x 150 mm, 5 $\mu$ m) and 200 nm diode array detectors. The mobile phase was phosphate buffer (PH 3.5) and acetonitrile (3:7) and flow rate 1ml/min. All outcomes will be designed to comply with ICH guidelines. Based on the findings, it is safer to conclude that this method for determining BHT in food items has been successfully developed and validated.

## Keywords

*Antioxidant, BHT, HPLC, experimental design, food items.*

## **ANALYSIS OF SOME IMPORTANT PHARMACEUTICAL COMPOUNDS CONTAINING HETEROGENEOUS ATOMS USING DIFFERENT METHODS**

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### **Abstract**

Analytical techniques are employed in pharmaceutical analysis for regular analysis, stability studies, and quality control, however they can have a significant impact on researchers' health and safety, as well as having a negative impact on the environment. The intended study's challenge is to design new approaches to analyze certain drugs without causing harm to the environment. Green, “Eco,” and “Environment-friendly” methods have been incorporated into various study fields as a result of scientific and public concern about health and the environment. The work course will be supported using chemometric techniques to aid in the improvement of the developed methods' performance.

### **Keywords**

*Analysis - methods*



## A GREEN HPLC METHOD FOR DETERMINATION OF CIPROFLOXACIN, METRONIDAZOLE AND AMOXICILLIN IN HUMAN URINE

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### Abstract

Green liquid chromatographic method with CN column, ethanol and 0.5% acetic acid in water (pH 2.8) as mobile phase in gradient mode has been developed for analysis of amoxicillin, metronidazole and ciprofloxacin in human urine. Identification and quantification was carried out with a diode-array detector, with working wavelengths of 255nm. The detection limits for each drug were 0.5 $\mu$ g/mL for amoxicillin, 0.14  $\mu$ g/mL for metronidazole and 3.07 $\mu$ g/mL for ciprofloxacin respectively. The method was rapid, specific, precise, accurate, environmental friendly and suitable for bioequivalence and pharmacokinetic studies.

### Keywords

*Green, HPLC, Ciprofloxacin, Metronidazole and Amoxicillin*