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The Conference Program

Effect of *Aloe vera* gel Cultivated in Iraq on blood glucose level and lipid profile in induced diabetic mice.

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Abstract:

In Iraq; Hyper glycemia and hyper lipidemia are both getting epidemic property, that make an important to search a medicinal plant extract to solve elevated of such cases. *Aloe vera* has been cultivated in Iraq, indicates to be rich with many active constituents. This study emphasized on the plant gel extract to treat diabetic- induced mice with streptozotocin, and the mice were fed on high fatty food to elevate lipid profile before treating with Aloe gel extract.

Results showed that oral administration *A.vera* extract and the anti diabetic drug Glibenclamide in a dose of 300mg/kg, 600µg/kg body weight respectively; the glucose level had been decreased after one week treatment. After Three weeks later blood glucose level was at lowest level with *A.vera* fed mice. Effect on lipid profile including level of cholesterol(Chol.), triglycerides(T.G) and High density lipoprotein (HDL); of *A.vera* extract after 21 days from the plant extract and the drug treatment, there were a decrease in chol. level and in T.G level, even in normal mice fed with the extract only . HDL level showed no change for the extract treatment than the diabetic negative control.

Key words:(*Aloe vera*, anti diabetic, lipid profile, HDL, Glibenclamide)

TLC identification of bacteriocin from different LAB clinical isolates of Najaf hospitals and in *in vitro* evaluation of its effectiveness against three pathogenic bacterial isolates.

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Abstract:

back ground: Probiotics are useful microorganisms that are effective in protecting against pathogenic microorganisms, used to support food to provide beneficial effects to human health by maintaining the natural balance of the intestinal flora and reducing diseases, especially those related to the

gastrointestinal tract. Objective: The ability of the Lactic acid bacteria to produce bacteriocin. materials & methods: Collected 74 samples from various clinical sources include 31 samples of mouth and 43 samples from Vaginal swabs, for the period July 2018 until December 2018. Results: The results of the isolation and laboratory diagnosis and biochemical testes the ownership of 43 isolates from lactic acid bacteria in vaginal swab and the highest percentage isolates bacterial (52%) of the samples of the vagina. All isolates showed lactic acid bacteria effectiveness of the microbial agents toward some negative bacterial species to dye grams diameters ranged between inhibition zones (14 – 22mm). Conclusion: showed RF bacteriocin values produced by the bacterium LAB isolates ranged from (0.45 – 0.57).
Keywords- Lactic acid bacteria LAB, bacteriocin, TLC.

Designing a Real – Time PCR (RT – PCR) method for early detection of pathogenic mutations causing hyperprolactinemia and breast cancer.

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Abstract:

A 320 Blood samples were drwan from women suffering hyperprolactinemia. A 200 of them were hyperprolactinemic, while the remaining suffered from breast cancer after confirmation test with CEA and Ca 15-3 biomarkers. Their ages ranged from 30 – 70 years. Molecular and genetic analysis for both types of female patients showed the presence of two pathogenic mutations: rs398122522 causing hyperprolactinemia, and rs72478580 causing breast cancer. Depending on the DNA sequence obtained from PCR amplification of exon 1 on chromosome 5 in which these lethal mutations are present, a Real – Time (RT – PCR) primers and probes were designed for early detection such genetic alteration which may help these women in early treatment and avoid fatality.

Keywords: breast cancer, hyperprolactinemia, RT – PCR, lethal mutations.

***ApoB* Gene Polymorphism (rs676210) and its Pharmacogenetics Impact on Atrovastatin Response among Iraqi Population with Coronary Artery Disease (CAD).**

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Abstract:

Background: Drug response is below genetic influence, proven by the genetic variants, pharmacogenetics trials are performed in many diseases, including coronary artery disease. It was designed to determine specific genetic variation in the lipid metabolism-related gene (*ApoB* gene) and implies correlation with cardiovascular disorders, specifically with coronary artery disease (CAD) and its pharmacogenetic role in the response to atorvastatin. Materials and methods: The *ApoB*₊₈₂₁₆ (rs676210) genetic polymorphism was studied in patients undergoing coronary angiography. One hundred Iraqi patients include 52 patients treated with 20mg/day and 48 patients treated with 40mg/day. In addition, 100 apparently healthy subjects and the reverse transcription quantitative polymerase chain reaction (RT-qPCR) analyses were conducted. Plasma level of oxidized low density lipoprotein (ox-LDL) determined in both patients and controls by competitive ELISA technique. Results: Significance differences of genotype distribution in CAD patients and controls were observed in *ApoB*₊₈₂₁₆ in Iraqi population from Hardy Weinberg Analysis. It also found that dramatic difference of LDL-C level in response to 40mg/day of atorvastatin therapy, the minor allele (A) observed a greater LDL-C lowering than the wild type allele (G). In ANOVA analysis, the result showed that the (rs676210, Pro2739Leu) in *ApoB* gene increased non significantly, but gradually in plasma level of total cholesterol (TC), triglyceride (TG), very low density lipoprotein (VLDL) and oxidize low density lipoprotein (oxLDL) in the order of genotype AA, GA and GG in response to 40mg atorvastatin. Conclusion: We found the results highlighted the function of the (rs676210) in the *ApoB* gene in (CAD) etiology, and the findings support this variant's impact in predicting the response of lipoprotein cholesterol (LDL-C) to 40 mg of atorvastatin therapy. *ApoB* polymorphisms, specifically the AA genotype, may help identify individuals who will profit from atorvastatin's lowering effects.

Keywords: Atherosclerosis, *ApoB* gene, Coronary artery disease, Genetic, single nucleotide polymorphism.

Developing a novel Immunotoxin for cancer treatment

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Abstract:

Conventional cancer therapies often have poor specificity, resulting in damage to normal tissues. Recent years have seen a huge growth in the development and use of antibodies to specifically target tumour cells (e.g. Herceptin). There is now increased interest in enhancing the natural properties of antibodies by conjugating them to drugs or toxins, especially where tumours have developed resistance to previous therapeutic regimes. The use of toxins in immunotherapy is somewhat controversial, however, and to date only diphtheria toxin has been approved for clinical use. One problem is that even with antibody targeting, there is a risk of damage to normal cells through inappropriate uptake of toxins. We recently identified a novel small toxin, BLF1, which is selective for rapidly dividing cells and only active if it is deliberately introduced into the cytoplasm (1, 2). These features

give BLF-1 significant advantages over other toxins that have been investigated. Unlike toxins that completely block protein translation by inactivating ribosomes, BLF-1 acts specifically to inhibit the initiation of translation mediated by elongation factor EIF4A. Rapidly dividing cells such as cancer cells are particularly dependent on EIF4A mediated translation. We have already demonstrated that BLF-1 introduced into cells using agents such as Lipofectamine™ can kill myeloid, lung cancer and neuroblastoma cells in culture, whereas it has little activity against normal non-dividing cells. We now plan to determine if BLF-1 can be targeted to kill specific cell types using antibodies.

Modifying The Band Gap of Nano Titanium Dioxide by Solid State Reactions With Platinum Determining Their Photocatalytic Activity.

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Abstract:

This study includes preparation of nanoparticles of titanium dioxide using sol-gel method and then, the band gap was modified by solid state reaction with Platinum (Pt), reductive compounds. Modification reduced the band gap separating energy levels between valence band (VB) and conduction band (CB), therefore; The optical properties measured using UV-visible spectrophotometer (Absorbance (A), energy band gap (Eg) and absorption coefficient (α)). TiO₂ and TiO₂- solid state reaction showed clear blue shift of the absorption band gap which were (2.8eV, 2.7eV, 2.25eV, 2.0eV) to TiO₂- Pt(550), TiO₂-Pt (700), TiO₂-Pt (500) and TiO₂-Pt(700) respectively. The structure of prepared TiO₂ nanopowders were identified using XRD, the particle size and their distribution were characterized using (AFM). To the surface forms and compositions diameters of nanoparticles SEM) was implemented. The energy dispersive X-ray (EDX) microanalysis was utilized to investigate the chemical composition of the whole samples. was tested against four different pathogen bacteria two gram negative (Escherichia coli (E.coli), Klebsiella pneumoniae (K. pneumoniae)), and two gram positive (Streptococcus pyogenes (S. pyogenes) and Staphylococcus aureus (S. aureus)) by one method, photocatalyst of titanium dioxide nanoparticles. The composite nanoparticles that exhibited the best antibacterial activity in medium method are tested by this method the well diffusion method, and reveals that the best concentration of Nano exposure 400 $\mu\text{g.mL}^{-1}$ that exhibit the best antibacterial activity are enhanced and become better when it doped with 65% titanium dioxide nanoparticles.

Keywords: Titanium Dioxide, Nano particles, Nano composite, pathogen bacteria, gram negative.

MyomiRs, UTRN and TGF β Blood-Transcriptomic levels' shifts detected in DMD patients and Female Carriers.

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Abstract:

Introduction: Duchenne Muscular Dystrophy (DMD) is a monogenic X-linked recessive neuromuscular disorder that affects dystrophin gene leading to production of truncated non-functional dystrophin protein that leads to progressive muscle degeneration, ambulatory loss, respiratory complications and heart failure. The loss of dystrophin is usually accompanied by the alteration of the levels of some muscular proteins like Utrophin, a homologue of dystrophin protein. Because mRNA content of peripheral blood is known to be affected according to the transcriptome of other body tissues

Aim: In this study we investigated the transcriptomic aberrations in plasma and blood cells of DMD patients and female carriers to develop a simple diagnostic tool of DMD and to help in identification of female carriers.

Effective inhibition of oral candidiasis using Eco-friendly *Fusarium chlamyosporum* mediated silver nanoparticles.

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Abstract:

Background and aim: The pathogenicity of *Candida albicans* is controlled by different virulence attributes such as germ tube formation, yeast- hypha transition and formation of drug resistant biofilm. We aimed to explore the anticandidal effects of silver nanoparticles (AgNPs) biosynthesized by *Fusarium chlamyosporum* (F-AgNPs) alone or in a combination with the standard antifungal drug amphotericine b (F-AgNPs/AMP) on growth, cell morphology and different virulence factors of *C. albicans*. Methods: F-AgNPs were manufactured using the cell-free culture filtrate of the fungus *F. chlamyosporum*, and were characterized using UV-Vis spectrophotometry, Fourier-transform infrared

spectroscopy (FTIR), scanning electron microscopy (SEM), and X-ray diffraction (XRD). The standard disc diffusion method, time-kill assay, TEM and SEM were used to evaluate anticandidal activity of F-AgNPs/AMP on *C. albicans*. In addition, the cytotoxicity of F-AgNPs/AMP was determined on MCF-7 cell line. Results: The standard disk diffusion method showed that F-AgNPs exhibited anticandidal activity (16.33-mm inhibition zone), while F-AgNPs/AMP displayed a strong synergistic anticandidal potential (22.76-mm inhibition zone). Similarly, F-AgNPs/AMP completely inhibited the growth of *C. albicans* after 4 h of incubation, as measured by time-kill assay. F-AgNPs/AMP inhibited the dimorphic transition of *C. albicans* at concentration lower than MIC. SEM revealed increased the number of buds and changes in the cell wall ultrastructure of F-AgNPs/AMP treated *C. albicans*. In addition, TEM of F-AgNPs/AMP treated yeast cells displayed perturbation of cell wall, disruption of cell membrane. Biofilms exposed to FAgNPs/AMP contained substantially more blastospores than non-treated biofilms. The counts of biofilms grown in FAgNPs/AMP were inhibited by approximately 80% as compared to the control untreated biofilms. Interestingly, F-AgNPs/AMP did not show any cytotoxicity in MCF-7 cell line at the concentration used to completely inhibit the morphogenesis of *C. albicans*.

Conclusion: We identified F-AgNPs/AMP as a promising natural-product-based nanoparticle that can potentially developed into new anticandidal drug for the treatment of oral candidiasis.

A-769662 stimulates the differentiation of bone marrow-derived mesenchymal stem cells into osteoblasts versus adipocytes via AMP-activated protein kinase-dependent mechanism.

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Abstract:

Background and Aim: AMP-activated protein kinase (AMPK) signaling plays an important role in energy metabolism and has recently shown to be involved in osteoblast and adipocyte differentiation. In this study, we investigated the effects of an AMPK activator, A-769662, on the differentiation of mouse bone-marrow-derived mesenchymal stem cells (BMSCs) into osteoblasts and adipocytes. Methods: The effect of A-769662 on osteogenesis was determined by alkaline phosphatase (ALP) activity quantification, Alizarin red staining for matrix mineralization and quantitative real-time polymerase chain reaction (qPCR) for osteogenic markers. Adipogenesis was assessed by Oil Red O staining for fat droplets and qPCR analysis of adipogenic markers. Expression of AMPK signaling was assessed by western blot analysis. The expression of AMPK pathway-related proteins was determined by western blot analysis. Results: A-769662 significantly stimulated mouse (m) BMSCs differentiation

into osteoblastic cells and suppressed their capacity to differentiate into adipocytes in a dose-dependent manner. Treatment of mBMSCs with A-769662 at different stages during osteogenesis revealed the stimulatory effect of A-769662 on the early commitment of mBMSCs differentiation into osteoblasts. The effects of A-769662 on stimulating osteogenesis and inhibiting adipogenesis of mBMSCs were significantly abolished upon AMPK suppression with Compound C. Furthermore, A-769662 stimulated the differentiation of human (h) BMSCs into osteoblasts versus adipocytes. Conclusion: Our data identified A-769662 as a new compound that directed the early commitment of BMSCs into osteoblasts versus adipocytes. Thus, A-769662 has the potential to be used as an osteo-anabolic drug for treatment of osteoporosis.

Evaluation of immunoglobulins IgG, IgM, IgA and complement components C3 and C4 levels in Iraqi full term neonates with severe hyperbilirubinemia.

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Abstract:

Background and aim: Hyperbilirubinemia is an elevation of the bilirubin levels in blood of newborn babies that presented as jaundice. This study aimed to evaluate the levels of important of immunological system proteins (IgG, IgM, IgA, C3 and C4) in both newborn babies with severe hyperbilirubinemia and healthy controls. Methods: Thirty (30) full-term neonates with severe hyperbilirubinemia (serum bilirubin >20 mg/dl) and twenty five (25) healthy control full-term neonates were included in the study. Blood samples taken and Hb, total serum bilirubin, total protein measured immediately by spectrophotometer. IgG, IgM, IgA, C3 and C4 measured by immune-nephelometric method. Results: In hyperbilirubinemia group (Male/ Female percentages) were (63% / 37%), (IgG 373.4±218 mg/dl), (IgM 20.5 ± 24.03 mg/dl), and (C3 209.4±17.81 mg/dl) values were significantly lower than control group (588.2±298.5 mg/dl IgG, 26.44 ± 2.92 mg/dl IgM and 627.5±221.1 mg/dl for C3). Correlation analysis revealed that in control group IgG, IgM, and C3 shown to be significantly (P value <0.05) and positively correlated (r-value > 3) with both age and weight. Conclusions: jaundice is a risk factor for sepsis that could be due to lower levels of immunoglobulins and complements components. The normal development of immune system that observed with increasing age and weight was impaired in patients with neonatal hyperbilirubinemia.

Key words: Neonatal hyperbilirubinemia, Complement components, Immunoglobulins and Total serum bilirubin.

Estimation of the Biological Activity of Some Commercial Bleaching Solutions (Hypochlorites) on Pathogenic Bacteria.

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Abstract:

Hypochlorites, the active ingredients in bleach, are an extremely useful chemical that have been used since the 18th century as a disinfectant. Hypochlorite solutions are in general strong oxidizing agents. The study included of five species of hypochlorite solutions widely used as commercial bleaching solutions (*Shoof*, *Oroplus*, *Alwazir* , *Lamoa* and *Fas*) and their concentrations were confirmed chemically by potentiometric titration methods previously and applicate their ability and efficiency against two types of bacteria (*E.coli* and *Staphylococcus arueus*) which are isolated from human infected sample in general Heat hospital /Iraq. The results revealed that all bleaching solutions have anti-bacterial influence against two species of bacteria and more successful against *Staphylococcus aureus* than the *E.coli* especially with *Alwazir* solution give high significant difference compared with other solutions ,also the outcomes showed sensitivity of bacteria enhanced with concentrations of bleaching solutions. The study indicates the fast reduction rate in the 30S reaction showed the immediate efficiency of Hypochlorites. Finally the current study suggest and encourage to use hypochlorite solutions as antiseptics and disinfectants to killing species of bacteria which proved their efficiency during this study.

Keywords: Bleaching solutions, *E.coli* and *Staphylococcus arueus* ,Antimicrobial, Microorganism, Hypochlorite's.

Modulating DNA repair choice to improve efficiency of CRISPR-based gene editing.

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Abstract:

CRISPR technology has been used for precise genome editing in mammalian cells to facilitate gene knockout, endogenous gene labeling, knock-in of specific gene variants. Gene editing by CRISPR technology is an area of intense investigation given its potential in gene therapy, with much focus on methods to increase efficacy of successfully knock-in to introduce or correct endogenous gene variants. The end-product of a CRISPR induced DNA break involves a choice in DNA repair between non-homologous end joining (which can introduce small insertion/deletion mutations leading to gene disruption), and homology mediated repair based on a donor template (which results in knock in or a directed change of endogenous gene sequence). In this project we attempted to use methods to increase rate of homology mediated, template-directed repair at CRIPSR-induced DNA break using a versatile system that can facilitate the recruitment of resection proteins to the site of DNA damage induced by the CAS9 complex. In particular we designed strategies to promote recruitment of CTIP, SAMHD1 and EXO1 to CRIPSR induced breaks, to induce DNA resection and initiate the HR pathway and ultimately increase the knock-in efficiency. Using a several reporter systems, we can demonstrate increased efficiency of successful gene targeting with our system. This suggests that manipulation of DNA repair choice is a viable strategy to improve efficiency of CRISPR mediated gene editing.

Association of thyroid hormones and iron deficiency among pregnant Iraqi women in the first trimester of pregnancy.

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Abstract:

Objectives: The primary objective of this research was to establish the reference value of the thyroid hormone in the first trimester of pregnancy in the populace of Iraq. The second objective is to investigate the relationship between thyroid hormone and iron deficiency anemia. Our knowledge concerning iron stores correlation with thyroid hormone is scrutinized. **Materials, Methods:** The study was carried out in the national center of Haematology, which receives a hundred cases of anemia every month. Includes 74 participants in their first trimester fitted our criteria, we explain study aims and prouder Blood samples were sent for iron indices[hemoglobin, serum ferittein] & thyroid function test[T3, T4&TSH] **Result:** Our analysis identified the reference value for thyroid hormones for the pregnant Iraqi population throughout the first trimester as 1.78 pmol / l, 4.58 pmol / l. 190 ng/dl for TSH, T4, and T3 respectively. A direct relationship was proved between the concentrations of TSH levels with serum ferritin. A simultaneous inverse relationship between TSH levels and the low circulating ferritin level. The strength of association was tested by mallows coefficient CP; T3 and TSH were statistically insignificant with CP value of 4,13.9 respectively. T3, T4 was challenged versus hemoglobin and serum ferritin the association was highly significant for serum ferritin. **Conclusions:** screening for serum ferritin in addition to hemoglobin level can unveil hidden depleted iron stores. On the other hand, TSH screening is advised as they can coexist together. Early diagnosis of these deficiencies especially during first-trimester will be crucial to contradict their impact in an ongoing pregnancy.

Keywords: thyroid hormone, iron deficiency anemia, serum ferritin, first trimester

Effect of Matrix Metalloproteinase on Glioma Progression and its Genetic Polymorphism in Iraqi Patients.

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Abstract:

Glioma is a kind of tumor that occurs in the brain, which quickly growing and usually manifest in an aggressive infiltrative model. Matrix metalloproteinase-8 (MMP8) also known as neutrophil collagenase cleaving enzyme encoded by the MMP8 gene that localize in chromosome 11q22.3, which

strongly associated with brain malignancy and metastasis formation. The study included (127 patients and 109 healthy individuals) and intended to assess the effect of the three frequent SNPs in MMP8 gene (rs17099451, rs11225395 and rs35308160) on the progression of glioma. The various SNPs in MMP8 gene determined by using specific primer to amplify the particular region of the gene that contains three SNPs followed by DNA sequencing and estimation serum level of MMP8 by sandwich ELISA technique. Results revealed that elevated serum level of MMP8 (78.898 ± 19.413 pg/ml) expressed in patients than healthy group (19.26 ± 0.87) with significant difference. The highest level of MMP8 expressed in sera of patients with advanced high grade and the frequency distributions of genotypes and alleles of three SNPs among the patients has positive association as risk factor. Conclusion: MMP8 has a significant role in the glioma pathogenesis and could be used as a potential molecular marker for tumor progression.

Keywords: MMP8, gene polymorphism, Glioma.

The Use of Nanotechnology in Medicine.

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Abstract:

Medical nanotechnology that will lead to the development of research methods, advanced systems for drug delivery, new methods for treating disease or repairing damaged tissues and cells now delivering medicine is the most advanced application of nanotechnology in the field of medicine. Nanoparticles are being developed to improve the bioavailability of medication, a major constraint in designing new drugs that are taken as fat or polymer molecules based on cell registration because of their small size, and instead of being cleared by the body. These nanoparticles can be used on shuttle medications in cells that may not be medicinal on their own. The nanoparticles may be specifically able to target some cell types, reduce toxicity and improve efficacy

Key word: Nanotechnology, Nanoparticle, Nanodiamants

Influence of Melatonin in the treatment of experimental *Enterobius vermicularis* infection.

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Abstract:

This study aims to realization the conceivable therapeutic of melatonin effects experimental against *Enterobius vermicularis* in rats. Implement this experiment during the period from August 2019 to January 2020. *E.vermicularis* infected with male wistar rats orally with dose 15mg/kg melatonin former of body weight for 30 day showed significantly reduction in the number of eggs and worms compared with rats orally with dose 15mg/kg melatonin accompanying and untreated rats for 30 day ($P < 0.05$).Histologically in intestine examined show increase numbers of leucocytes produce, necrosis significant scatter and reduction this parasite of tissue in rats treated with melatonin. This results show influence of melatonin in the control on *Enterobiosis* and suggestion that this drug usefulness in *Enterobius vermicularis* infection therapy.

Keyword: Eggs, Worms, *Enterobius vermicularis*, Melatonin, Former.

Serum Levels of IL-27 in T1DM children infected with *H. pylori* and its association with *CagA* positivity.

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Abstract:

Background: interleukin 27 (IL27) is a cytokine has dual roles in the immune response and contributes to autoimmunity. Type 1 diabetes mellitus (T1DM) is one of the most important autoimmune diseases. *Helicobacter pylori* was recently observed that their prevalence in patients with diabetes mellitus increased with a capability to stimulate the production of various cytokines. Aims: This study aimed to detect Serum Levels of IL-27 in T1DM children and the differences according to presence or absence of *H. pylori*, and its association with *CagA* positivity. Patients and Methods: Following a cross-sectional design, (204) samples were collected (91) males and (113) females from children with T1DM from the age group (1-15) years, for the period between 3 December, 2018 to 15 February, 2019, from two hospitals in Baghdad. Moral approval and case history were obtained from the parents according to a pre-designed questionnaire. Rapid chromatographic immunoassay was used to detect *H. pylori* infection. IL-27 and *H. pylori CagA* tests were performed using ELISA technique. Results: The current study showed significant differences among the serum IL-27 levels of groups of T1DM patients with *H. pylori* (Hp+), without *H. pylori* (Hp-) and apparently healthy group ($p=0.050$). We found that serum IL-27 levels significantly different in Hp+ and Hp- groups ($p=0.030$). in addition, there was high significant differences between *CagA* positive and *CagA* negative groups ($p\leq 0.009$). Finally, there was a low

positive highly significant correlation between IL-27 and *CagA* positivity (Pearson Correlation= 0.341, $p \leq 0.009$) and the direction of the correlation is from the *CagA* positive toward *CagA* negative groups.

Conclusion: The infection with *H. pylori* leads to decreased levels of IL-27 in T1DM children. Moreover, infection with *CagA* positive strain leads to lesser production of IL-27

Key words: IL-27, T1DM, children, *H. pylori*, *CagA*, ELISA.

Gene expression of *PROTAMINE 1* gene in infertile men: A case-control study in Iraqi patients.

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Abstract:

The study was conducted to determine the expression of *PROTAMINE 1* gene in the semen and blood samples of infertile Iraqi men. In the present study, following the semen analysis, 50 patients and 50 healthy fertile controls were enrolled. The samples were collected from Biotechnology Research Center / Al-Nahrain university and Kamal Al-Samarie IVF Hospital, Baghdad, Iraq. The determinations of gene expression was carried out by reverse transcription quantitative polymerase chain reaction (RT-qPCR) of semen and blood samples. The difference in the mean of threshold cycle (ΔCt) of *PROTAMINE 1* mRNA showed a significant difference ($p < 0.05$) in infertile patients group compared to corresponding means in fertile control group in the two types of samples. Assessing the $2^{-\Delta \Delta Ct}$ means revealed important finding that there was a decreased expression in the folding of *PRM 1* mRNA of infertile group comparing to control group. It is concluded that the gene expression of *PRM 1* was down-regulated in infertile Iraqi patients. Moreover, this gene may have a role in infertile patients complaining from idiopathic infertility.

Keywords: *PROTAMINE 1* gene, gene expression, infertile Iraqi patients

Establishment And Immunological Characterization of Human Umbilical Cord Mesenchymal Stem Cells.

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Abstract:

Mesenchymal stem cells (MSC) are considered as a very promising transplantable stem cell source for a variety of cell replacement therapies. Umbilical cord (UC)-derived MSC (UC-

MSC) which are recently introduced as one of the good alternative sources for these cells. The present study was aimed to isolate and characterize mesenchymal stem cells from Umbilical cord of human embryos after delivery by using two methods. Fresh Human Umbilical cords (n = 8) were obtained after cesarean section deliveries at the Department of Obstetrics and Gynecology in Al-Yarmouk hospital, samples were divided randomly in two groups each group have (n = 4) samples. In enzymatic group, each UCs was cut into 5 cm² segments. The segments were cut longitudinally, and blood vessels were removed. The remaining tissue pieces were digesting with collagenase type I with (0.2 mg/ml) concentration, for 3 hrs at room temperature with mild shaking. While, in Explants group, The wharton's jelly was scraped and collected away from the blood vessels and inner epithelium of the subamnion using a scalpel. In both methods the isolated cells were cultured using DMEM under optimum tissue culture condition. Identification of the isolated MSCs achieved first through their ability to adhere on the surface of the culture falcon during 24 hrs, their distinct spindle shpe morphology similar to the morphology of fibroblast cells, Immunophenotypic analysis and trypan blue dye exclusion test. In both methods, after 24 hours from the primary culture the culture medium were discarded from the falcon to ensure the isolation of the targeting cells (MSCs) since these cells have the character of adhering to the cultured falcon surface after 24 hrs. The results of the appearance of the isolated cells in the enzymatic group, first at the beginning culture, the primary isolated cells were showed high of cells heterogeneity in shape with high number of small round cells with a relatively high nuclear to cytoplasm ratio, then cells in the next day begins to show the grouping character and start to adhere to the surface of the culture falcon, after that cells begin to show the typical spindle shape appearance which is fibroblast-like cells as short, long cells and flat ones. While in the explant method, the isolated cell populations were less heterogeneous and less number of round cells which begin to take the spindle like shape fibroblast-like cells appearance in the next weeks of the culturing. The evaluation of living cells in different passages were done by using trypan blue dye exclusion technique, the percentage of living cells obtained by the two methods for different passages was estimated to be about 90%. However, the number of isolated cells was 1.5×10⁶ and 1×10⁶ cells in the Enzymatic and Explants groups, respectively. However, population doubling time (PDT) for isolated MSCs using with either enzymatic or explant method did not change significantly between two media throughout culture period from passage 1 to 3 (p-value > 0.05), with lower PDT for cells cultured in enzymatic method than for cells cultured with Explant Method. By using immunocytochemistry technique, the Immunophenotypic analysis of the isolated cells from the human umbilical cord demonstrated positive reactivity towards the immunophentypic cluster of differentiation CD105 and negative reactivity of Immunophenotypic cluster of differentiation of heamatopoietic stem cells specific markers CD34.

Vitamin D and Clinical Implications for Obesity-related Type 2 Diabetes Mellitus.

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Abstract:

Background: Obesity and type 2 diabetes have both rapidly raised during the last periods and are ongoing to increase at a disturbing rate universal. Several clinical and epidemiological researches demonstrated a reverse association between circulating vitamin D levels, central adiposity and the progress of insulin

resistance and diabetes. Objective: The target of this work was to elucidate the complex role of vitamin D and the clinical implications of diabetes on metabolic defects related with obesity. Subjects and Methods: This study encompassed 90 diabetic patients (45 obese and 45 non obese) who were attending the National Diabetic Center/ Al-Mustansiriyah University during the period from June 2019 to January 2020; their age range was (35-60) years. All participant underwent clinical and biochemical examinations. Results: A substantial rise ($p= 0.01$) in waist/hip ratio, body mass index, fasting serum glucose, total cholesterol, triacylglycerol, and low density lipoprotein cholesterol in obese diabetic patients as paralleled to non-obese group. Moreover, there was an elevation in glycated hemoglobin, serum insulin, and homeostasis model assessment for insulin resistance in obese group, but it was not significant. A substantial decrease ($p= 0.01$) in serum high density lipoprotein cholesterol and vitamin D3 were detected in obese diabetic patients as paralleled to non-obese group. Also, obese diabetic patients had the higher percent (61%) of D3 deficiency as paralleled to non-obese patients.

Conclusions: In the present study, it is found that there is significant increase in blood sugar in the individuals with decreased vitamin D levels, which was related with insulin resistance, decreased β -cell function, and obesity.

Keywords: Diabetes Mellitus, Obesity, Insulin Resistance, Vitamin D3.

***Staphylococcus aureus* enterotoxin A as a major risk factor for multiple sclerosis severity.**

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Abstract:

Background: *Staphylococcus aureus* produce enterotoxins that function as superantigens which activate autoreactive CD4+ T-cells potentially target the basic myelin protein into the CNS. Objective: This study investigates the correlation between the colonization of *S. aureus* harbouring enterotoxins with multiple sclerosis (MS) exacerbation. Methods: A total of 200 nasal swabs were collected from three study groups : Healthy controls as a non-MS subjects($n=100$) , relapsing remitting MS or exacerbated ($n=50$) and newly diagnosed MS. ($n=50$) . *S. aureus* was isolated from the anterior nares of these groups following standard operating procedures. Antibiotic susceptibility test against 19 antibiotics using disk diffusion method were done. Staphylococcal superantigen *seA*, *seB*, *seC* genes were amplified using standard conventional polymerase chain reaction (PCR) technique and resolved by agarose gel electrophoresis. Results: In this study, Out of 100 MS patients and 100 healthy control group, there were 36% and 46% males and 64% and 54% females respectively. A total of 81(81%) were colonized

with *S. aureus* includes, 31(38.2%) newly diagnosed MS and 50(61.8%) exacerbated MS while only 12(12%) isolated from control non-MS group. All *S. aureus* isolates were resistant to Methicillin(100%) and sensitive to Imipenem(100%) . PCR results showed that, the frequency of enterotoxins (*sea*, *seb* and *sec*) in MS patients was (42.4%) including (40.8%) were from newly diagnosed and (43.3%) were from relapsing remitting while there is no enterotoxins was detected in control group. the prevalence of *se A* was significantly higher ($p<0.00$) in the MS exacerbation (72%) than in newly diagnosed group (64.5%). Conclusions: The frequency of *S.aureus* isolates and its enterotoxin *seA* gene is high in the MS patients and this gene serve as an important marker in the severity of MS disease. Also *S.aureus* isolates were sensitive to imipenem which is considered as a better choice for nasal decolonization of *S.aureus* in the MS patients.

Keywords Multiple sclerosis (MS), *Staphylococcus aureus*, superantigens, enterotoxin A,B,C.

Dual drug loaded Multi Layer Nanoparticles effectively induce apoptosis in oral carcinoma cells.

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Abstract:

Combinations of natural bee wax flavones chrysin with a chemo drug have been exhibiting high potential with reduced adverse effect. To extend the synergistic effect of chrysin and improve the MLNPs (Multi Layer Nanoparticles) performance in drug release, layer-by-layer of poly [di(sodium carboxyphenoxy)phosphazene](PDCPP) and poly (diallyldimethyl ammonium chloride) (PDADMAC) deposited on the CaCO₃ nanoparticles(CCNPs) surface. The results suggest spherical MLNPs of 237 nm are formed with high drug loading content with enhanced cellular uptake. Under acidic conditions, multi layer structure effectively controls burst release, providing sustained drug release for long period. The combined effect of chrysin and cisplatin improved the cytotoxic potential of MLNPs at 25 $\mu\text{g.mL}^{-1}$ concentration. Angiogenesis inhibitor chrysin activates reactive oxygen species (ROS) production and eventually leads to mitochondrial dysfunction. Furthermore, significant decreases of buccal pouch carcinoma in hamster model. Dual drug loaded MLNPs achieves 92% regressions of tumor volume as compared to cisplatin alone loaded MLNPs. In addition, Histopathology studies demonstrated the biocompatible effect of MLNPs on vital organs. This work provides a simple method to formulate multiple drugs in single nanosystem with high therapeutic efficacy on oral cancer.

Keywords: Multilayer nanoparticles, Bee wax, Chrysin, Drug release. In-vivo, Oral carcinogenesis

Histological Effect of Androgenic Anabolic Steroids on Liver

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Abstract:

Anabolic androgenic steroids (AAS) they are the synthetic type of the natural male sex hormone (testosterone), they are widespread used amongst athletes to enhance performance. Abuse of Anabolic steroid is common among athletes and it is usually accompanied by a number of medical complications. It was reported that hepatic problems include cholestasis, elevation of liver enzymes e.g. aminotransferases, jaundice, benign hepatic adenomas, and rare cases of hepatocellular carcinoma was associated with their use. A total of (12) adult New Zealand rabbits (*Oryctolagus cuniculus*) male, aged one year was selected. 2 control animals and 10 were treated with injections intramuscularly of the AAS, nandrolone decanoate (15 mg/kg) three times a week for 12 weeks. At the end of experiment the animals were sacrificed and the liver was dissected out and fixed using 10% buffered formalin-saline to prepare blocks for staining with haematoxylin and eosin for histological examination using the light microscope. The liver of treated animals reveals that there are a mild to sever vascular congestion. There is swelling of hepatocytes, and inflammatory cell infiltration. Perivascular fibrosis, cellular necrosis was observed in other slides with sinusoidal congestions and extrabiliary bile pigments deposits. The benefit of anabolic steroids comes with unwanted side effects. The total volume of the hepatocytes and sinusoids were increased in the studied animals. The total number of hepatocytes nuclei in experimental group also increased. The damage of the liver cells or at least increased permeability of the hepatocellular membrane which is noticed in the present work could explain the increment of plasma levels of liver enzymes which was studied by other researchers, as they notice an elevation in plasma activity of liver enzymes such as aspartate aminotransferase (AST), alanine aminotransferase (ALT), alkaline phosphatase (AP), lactate dehydrogenase(LDH),and gamma glutamyl transpeptidase (GGT). Patients and physicians must kept in mind that the sequelae of AAS abuse are life threatening. So people should be aware about the complications of AAS use and a periodic examination of liver function and check out should be done to those treated groups.

The expression of serum tumor markers (EPGF and VEGF) in patients with oral and oropharyngeal squamous cell carcinoma in Basrah city (A case control study).

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Abstract :

Background: The first part of the digestive tract is the oral mucosa ,which exposed to different exogenous toxins ,long period of exposure could lead to malignant changes /tumors. One of the

prevalent cancers of the body is Oral squamous cell carcinoma, oral cancer sometimes may be resemble benign lesions in the mouth therefor, the diagnosis may be not easy clinically .There appear the importance of serum tumor markers in distinguishing different pathologies. Aims :The aim of this study was to identify the role of serum tumor markers (VEGF ,EPGF) in the pathogenesis of oral and oropharyngeal squamous cell carcinoma. Patients and Methods: This study included 20 patients with oral and oropharyngeal squamous cell carcinoma were clinically diagnosed and then confirmed by histopathological examination and 26 healthy control , Age, gender, as well as the level of tumor markers in the serum of patients and healthy control were measured, in addition clinical signs and the site of lesions were recorded for patients group

Results: There were 20 new cases of oral and oropharyngeal squamous cell carcinoma in Basrah from September 2015 to December 2016 , 12 in men and 8 in women . 26 healthy control individuals 17 men and 9 female were included in this study . Cancer at all oral sites affected men more than women. The Tongue is the most frequent site .The level of serum tumor markers (VEGF and EPGF) in patients group were much more than those in healthy control group .

Key Words: SCC, oral ,Oropharyngeal squamous cell carcinoma , tumor markers (EPGF and VEGF)

Association of vitamin D receptor *FokI* polymorphism and some clinical parameters with diabetes mellitus (Type 1 and Type 2) in Iraqi patients.

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Abstract:

Objective: The aim of the present study is to compare the pattern of vitamin D level and vitamin D receptor polymorphisms *FokI* in Iraqi diabetics, type1 and type2 (T1DM and T2DM), versus healthy population as control. Methods: The cases-control study was carried on 75 cases. 45 T2DM, 30 T1DM and 25 control group. T2DM and control samples were collected from Al-Yarmouk Teaching Hospital, while T1 DM and control group were collected from Pediatric Central Teaching Hospital, during January 2016 through April 2016. Vitamin D level for both of patients and controls were measured by using Enzyme Linked Immunosorbent Assay (ELISA). Blood glucose and Glycated Hemoglobin were measured by enzyme method. Moreover, genotyping was performed by Restriction Fragment Length Polymorphism (RFLP)– PCR method after DNA amplification. The data were analyzed statistically by using IBM-SPSS v.24 and Winpepi, compare program. Results: Logistic regression test revealed insignificant association between TT and CC genotypes for both T1DM and T2DM (For T1DM: OR=1.36, 95%CI=0.42-4.43, P=0.425 and OR=1.00, 95%CI=0.35-2.90, P=0.608. For T2DM: OR=1.59, 95%CI= 0.39-6.45, P=0.394 and OR= 1.43 95%CI = 0.54-3.80, P=0.322, respectively). Furthermore, T allele appeared as etiological factor in T1DM (OR=1.45, 95%CI= 0.68-3.12). While, C allele was etiological factor in T2DM (OR =1.07 95%CI =0.52-2.19, P=0.455). In addition, serum levels of glucose, Glycated hemoglobin, and vitamin D showed remarkable increase in the patients group compared to the controls group (P ≤ 0.05). Conclusion: The study showed relation between Vitamin D

deficiency and high level of glucose with DM patients. There was no association between (*FokI*) polymorphism and diabetes mellitus. In contrast, this study showed that allele distribution and genotype were as preventive factor and which was as etiological factor in both types. The samples of patients have sequencing ID LC342080.1 and LC342081.1, and 99% identities, score 219 with reference at NCBI.

Key words - Diabetes mellitus; Vitamin D; FokI Polymorphism rs2228570; Vitamin D Receptor.

Locally vaccine Preparation Viruses associated with Diabetes mellitus type 1 of Children.

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Abstract:

The study included the diagnosis of viruses association with diabetes mellitus type 1 of children, where the number of cases coincided with viruses (Enterovirus, Coxsackie virus B4, Echovirus) 185 positive case of 283 case was diagnosed with viruses through real-time PCR. The current study found that the number of cases of infection with the virus Coxsackie virus B4 (60) case and Echovirus (33) case, and the most common infection Enterovirus (92) case for the period from 4-2-2016 and 26-2-2017. The number of cases of the age group between 2 - 5 years, the ages the numbe of cases of males (105) and female (80) for different groups during the study. The virus was propagated of the chicken fibroblast cell culture of 0.5 ml / TCID50 (107.2) and 0.1 ml ELD 50 (107.5) for Enterovirus and Coxsackie virus B4 [0.5 ml / TCID50 (10 6.5)], and 0.1 ml ELD 50 (106.9), Echovirus 0.5 ml / TCID50 (105.9) and / 0.1 ml ELD 50 (106.1) and then inhibited by gamma radiation (Cobalt) with different doses according to the virus (6.742, 5.974, 5.764) mSv / h for viruses (Enterovirus , Coxsackie virus B4, Echovirus) ,For the preparation of a local vaccine and then observe the cellular effects of laboratory animals . For the first time, the study identifies the diagnosis, as well as the preparation of a local vaccine for pathogenic viruses.

Classification and Detection Dental Cyst by Using the Using Convolution Neural Network

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Abstract:

There are many different types of dental cysts. These range from completely benign to malignant, and identifying the exact cyst type can be challenging in clinical practice, Precise preoperative diagnosis of these cysts can help oral and maxillofacial surgeons plan appropriate treatment. This work describes an automatic classification algorithm that classifies of the cysts by using Dental X-ray images. Methods: In the proposed system the dental X-ray images undergo different image processing steps. Dataset contains 114 X-ray image these images which classify into nine types of the diseases. These diseases

Includes cysts. Divide the data set into two parts training part and test part in this study. Results: CNN measured both accuracy and loss based on the number of learning attempts (epoch) and learning rate (Validation). Conclusions: Cysts found by oral maxillofacial specialists using CNN based on optical panoramic radiographic images with accuracy equivalent to that of manual diagnosis. These findings indicate that CNN will help to screen cysts in a relatively shorter period of time.

Keywords: Image processing, image classification, OPG, CNN.

Association of vitamin D receptor BsmI polymorphism and some clinical parameters with renal failure in Iraqi patients.

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Abstract:

Objective: In this study, compare the pattern of vitamin D level and vitamin D receptor polymorphisms BsmI in renal failure, as cases versus healthy population as control in Iraqi patients. **Methods:** Hypothesis of the study was “VDR gene polymorphism BsmI rs1544410 A / G ” and vitamin D level are associated with renal failure. The cases-control study was carried on 70 cases and 25 controls. The samples were collected in Al-Yarmouk Teaching Hospital (renal failure and control) during January 2016 to April 2016. Vitamin D level of cases and controls were measured by using Enzyme Linked Immunosorbent Assay (ELISA). Blood lipid profile was measurement by enzyme method, liver enzymes were detecting by same method. Genotyping was performed by Restriction Fragment Length Polymorphism (RFLP) – PCR method after DNA amplification, and the data were analyzed statistically with IBM-SPSS v.24 and Winpepi, compare program. **Result:** Logistic regression test revealed insignificant association between GG and AA genotypes for patients with renal failure: OR=1.41, 95%CI=0.56-3.57, P=0.316 and OR=0.57, 95%CI=0.23-1.41, P=0.165 respectively. Furthermore, the G allele appeared as an etiological factor in patients (OR=1.56, 95%CI= 0.82-2.96). While, A allele was a preventive factor in patients (OR =0.64, 95%CI =0.34-1.22, P=0.122). In addition, serum levels of urea, creatinine, and lipid profile showed a remarkable increase in the patient group compared to the controls group ($P \leq 0.01$). **Conclusion:** The study showed relation between Vitamin D deficiency and high level of urea with renal failure patient. There was association between (BsmI) polymorphism and renal failure, this study showed which allele distribution and genotype were as preventive factor and which was as etiological factor in patients.

Key words : Renal failure; Vitamin D; BsmI Polymorphism rs1544410; Vitamin D Receptor.

Genetic Detection of entA gene in food and clinical isolates of

Enterococcus faecium.

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Abstract:

Introduction: The microbial production of substances have the ability to inhibit the growth of other microorganisms is possibly the most common defense strategy developed in nature, microorganisms produce a variable collection of microbial defense systems, which include antibiotics, metabolic by-products, lytic agents, bacteriocins and others. **Aim:** The aim of the current study was to

isolate and identify *Enterococcus faecium* isolates then detects its ability of carrying the gene responsible for enterocin production in this species. Materials and methods: Out of 50 samples from different sources (food and clinical sources) were collected for the *Enterococcus faecium* isolation, and the isolated bacteria (37) *Enterococcus faecium* isolates were detected for their harboring of Enterocin A gene (entA), using conventional PCR technique. Results and Conclusions: The identification revealed that 37(74%) isolates were considered as *Enterococcus faecium*, 54.05% 20 isolates out of food samples (10 samples were collected from dairies, 7 from vegetables and 3 from fish samples), and 17 isolates 45.9% out of clinical samples (11 from stool and 6 from urine source). Genotypic Detection done by the amplification of the enterocin coding gene (ent A), and the results revealed that all the isolates were harboring that gene despite of the phenotypical differences, that they amplified ent A gene and the PCR product size (362 bp) was detected using agarose gel electrophoresis. Conclusion: This study indicates the presence of *Enterococcus spp.* in food and clinical samples and the ability of these bacteria to produce antibacterial substances which is active against closely related clinical isolates.

Serum Levels of IL-27 in T1DM children infected with *H. pylori* and its association with *CagA* positivity.

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Abstract:

Background: interleukin 27 (IL27) is a cytokine has dual roles in the immune response and contributes to autoimmunity. Type 1 diabetes mellitus (T1DM) is one of the most important autoimmune diseases. *Helicobacter pylori* was recently observed that their prevalence in patients with diabetes mellitus increased with a capability to stimulate the production of various cytokines. Aims: This study aimed to detect Serum Levels of IL-27 in T1DM children and the differences according to presence or absence of *H. pylori*, and its association with *CagA* positivity. Patients and Methods: Following a cross-sectional design, (204) samples were collected (91) males and (113) females from children with T1DM from the age group (1-15) years, for the period between 3 December, 2018 to 15 February, 2019, from two hospitals in Baghdad. Moral approval and case history were obtained from the parents according to a pre-designed questionnaire. Rapid chromatographic immunoassay was used to detect *H. pylori* infection. IL-27 and *H. pylori CagA* tests were performed using ELISA technique. Results: The current study showed significant differences among the serum IL-27 levels of groups of T1DM patients with *H. pylori* (Hp+), without *H. pylori* (Hp-) and apparently healthy group ($p=0.050$). We found that serum IL-27 levels significantly different in Hp+ and Hp- groups ($p=0.030$). in addition, there was high significant differences between *CagA* positive and *CagA* negative groups ($p\leq 0.009$). Finally, there was a low positive highly significant correlation between IL-27 and *CagA* positivity (Spearman Correlation= 0.341 , $p\leq 0.009$) and the direction of the correlation is from the *CagA* positive toward *CagA* negative groups. Conclusion: The infection with *H. pylori* leads to decreased levels of IL-27 in T1DM children. Moreover, infection with *CagA* positive strain leads to lesser production of IL-27

Key words: IL-27, T1DM, children, *H. pylori*, *CagA*, ELISA.

Study the Correlation between Serum level of Several Cytokines with Development of BPH and Prostate Cancer in Iraqi Patients

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Abstract:

Prostate diseases are the prevalent age-related disease of the male. Chronic inflammation strongly associated with both benign and malignant conditions of the prostate that leads to accumulation of immunocompetent cells which secrete various cytokines that provide the suitable environment for various disease progression specially cancer. This study designed to estimate the serum level of several cytokines (IL-1 β , IL-4, IL-6, IL-8 and IL-17) by Sandwich ELISA. Blood samples were obtained from 297 subjects which divided into three groups (PCa, BPH and healthy) then the serum level cytokines was measured for each group. The Results showed that all cytokines except IL-4 expressed high serum level in the PCa group than BPH and healthy with significant differences, while serum level IL-4 significantly elevated in BPH patients when compared to both controls and prostate cancer patients.

Keywords: Prostate Cancer (PC), Benign Prostate Hyperplasia (BPH), Cytokines

Increasing levels of CD69 are associated with the flare up of SLE disease.

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Abstract:

Introduction: Systemic lupus erythematosus is a chronic multisystem auto-immune disease characterized by autoantibodies production, and immune complex formation. T-lymphocyte considered as key players in SLE pathogenesis as T-cells are most important in evaluating disease activity including CD69%. CD69 marker is a type II of C-lectin membrane bounded protein expressed as the earliest induced marker on T-lymphocyte surface (1,2). However most of previous studies dealing with CD69/CD3⁺ were investigated on cellular immunity in connection with other CD_s markers.

Aim: our objective was to investigate the percentage of CD69/CD3⁺ % expressed by T-cells of peripheral blood in SLE patients in conjugation with inflammatory markers such as presence of autoantibodies: ANA and ds-DNA, Complement: C3 and C4, CRP, CBC as well as SLE disease activity index (SLEDI).

Material & Methods: The blood and serum samples were collected from 64 SLE patients (fulfilled of SLEDI score) compared with 18 healthy controls, the age ranged (13-18 years). The CD69/CD3⁺ were isolated from whole blood samples and stained with FITC anti-CD69/CD3⁺ antibody analyzed by using Flowcytometry technique, while ESR and CBC by automated technique. The other inflammatory markers were measured using serum samples as (ANA, and dsDNA by immunofluorescent tech.), (C3, and C4 by SRID tech.), and (CRP by agglutination tech.).

Results: The level of biomarkers (CD69/CD3⁺%, CRP, lymphocytes, and ESR) were significantly higher in SLE patients than in healthy controls (p value: 0.0001, 0.0001, 0.005, 0.005 respectively). To

compare biomarkers levels in SLE patients between active group and inactive we found only percentage levels of CD69/CD3⁺% of active higher than inactive group (P value=0.0001). however we couldn't find any correlation between CD69/CD3⁺% and inflammatory markers. Conclusion: The increasing levels of the: (CRP, ESR, Lymphocytes, CD69/CD3⁺%) in patients with SLE than in healthy control suggesting their involvement in the pathogenesis of SLE. Whereas increased levels of CD69% of active than non-active group indicating that CD69 keep sustaining of autoimmune reaction and may be involved in flare up of SLE disease.

Screening for Cervical Cancer by Sequential Examination of the Cervix

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Abstract:

Background cervical cancer carries a death sentence in the mind of every patient. Since it has a long history; it can be cured if caught early. Pap smear screening has been effective in reducing rates of cervical cancer, still, it has some draws back especially low sensitivity. We aimed to increase the detection of Pap- tests by sequential examination of the cervix by Pap smear and colposcopy and to demonstrate the demographic criteria of those affected.

Material and method A Comparative clinical study, conducted in the department of Obstetrics & Gynecology in AL-Yarmouk hospital from 2017-2018, one hundred sexually active female fits into our inclusion & exclusion criteria were invited to participate after we explain it is aim, all participant filled a questioner sheet and were screened by Pap-smear then immediately by colposcopy exam.

Result history of post-coital bleeding & bleeding on touch scored meaningful P-value<0.05, Pap-smear examination shows 20% as abnormal study stratified into 13/20 CIN I [cervical intraepithelial neoplasm], 3/20 CIN II, 2/20 CIN III and 2/20 malignant cases. The colposcopy exam showed 32/100 abnormal cases necessitating directed histological biopsies. Examination confirms 20/32 CIN I, 7/32 CIN II, 2/32 CIN III, and 3/32 cases with cervical malignancy. Conclusions: cervical smear had specificity & positive predictive value of 100% yet it missed 11 cases diagnosed with colposcopy one was malignant. As a result, Pap-smear alone can detect up to 18% of the pre-cancerous lesion of the cervix, this figure increases to 29% when dumbing the results of the colposcopic directed biopsy. The sensitivity of the test was 62.5% with a false-negative percentage of 37.5%, having a total 88% accuracy rate & a negative predictive value of 85%, this study confirms the benefits of the combined method of screening and may be used to increase pap-smear sensitivity.

Key Words: CIN, cervical cancer, pap-smear, colposcopy, biopsy

Plant Biotechnology Sessions

The effect of gamma rays on quinoa plant and evaluation of promising genotypes under salinity conditions

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Abstract:

The research experiment was carried out by exposing quinoa seeds (Chipaya cv.) to different doses of gamma rays (control, 30, 60, 90, 120 and 150 Gy) and, the evaluation was done under salinity stress, in both the pots (control, 8 and 16 dsm⁻¹ of irrigation water) and the open field (control and 11 dsm⁻¹ approximately). The results showed clear differences at the level of all studied traits and based on the tolerance indices of the five genotypes (Chipaya and the four distinct mutations). Where, G4 was distinguished as a mutated genotype giving the highest grain yield under salt stress, the mutated genotype G5 was marked for the highest protein content. Gamma radiation induced genetic variation in the genotypes, as estimated by the cluster analysis of protein and ISSR markers resulted in two promising mutations for superior genotypes during the second mutant generation (M2). It should also be noted that 90 and 120 Gy doses revealed the highest effectiveness. These results indicated that gene expression and molecular analysis of selected mutated plants were completely confirmed together with the data of tested characters and tolerance indices of salinity stress. This research is providing new insights of molecular breeding for quinoa improvement to produce new promising genotypes powerfully face environmental stress and potential aid in future food shortage disasters.

Key words: Gamma ray, quinoa, breeding, salinity, SDS-PAGE, ISSR.

Anatomical and Molecular study of *Capsicum* L. Taxa (Solanaceae) cultivated in Iraq.

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Abstract:

The present work includes a comparative anatomical and molecular studies of six taxa belonging to the genus *Capsicum* L. which are grown widely in Iraq, the anatomical study investigated stem and leaf which were used to separate and identify the species, the anatomical result indicates that all taxa have anomocytic stomata, scattering trichomes in some taxa and absence in others also found in some parts of the plant but absence in other, these features were important in classification of the taxa of this genus. Phylogenetic side view by extracted DNA of fresh young leaves was from each sample for RAPD and ISSR Methods, RAPD method. 20 primers were tested for RAPD, but just 10 decamer primers clarify the diversity among the genus. The genetic cluster analyses of 10 RAPD and 8 ISSR primers, analysis of the pooled RAPD and ISSR data further support the genetic similarity range 0.54,0.5 sequentially., groupings. *C. frutescens* accessions formed a single cluster in both molecular analysis The matrix reveals that other *Capsicum* taxa separated to 2 sub-cluster, one of them includes two varieties were *C. annuum* var. *annuum* have been closest genetic distance matrix among taxa understudy and show up that is the same species but had two stages of maturation, including physiological and full

maturity so it appears differently morphologically but genetically integrated, ISSR. The results gained from this study can be used as a phylogenetic tool for a better understanding of the systematic study of this genus.

The Effect *Allium sativum* (Garlic Extract) as Prebiotic Substance on the Activity of Probiotic Bacteria *Lactobacillus acidophilus* Against Some Locally Isolates of Pathogenic Bacteria.

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Abstract:

The aim of this study was to improve the growth and inhibitory activity of the selected *Lactobacillus* isolate. A total of twenty samples of dairy products (fresh yogurt) were collected from Baghdad markets. Seven isolates of *Lactobacillus* spp. were obtained, and identified as three *Lactobacillus fermentum*, three *Lactobacillus acidophilus* and one of *Lactobacillus brevis*. The growth of *lactobacillus acidophilus* was counted, also inhibitory activity of *Lactobacillus acidophilus* against some pathogenic bacteria that isolated from clinical patient such as (*Salmonella typhimurium* and *Pseudomonas aeruginosa*) was tested on solid medium (nutrient agar) for two different incubation periods before the addition of *Allium sativum* (garlic extract) as prebiotic substances. To improve the growth and inhibitory activity of the selected isolate (*Lactobacillus acidophilus*), *Allium sativum* (garlic extract) with three different concentrations (10, 20, 30 %) v/v were used by addition of it to De Man, Rogosa and Sharpe agar (MRS) medium as prebiotic substances, and two incubation periods (24, 48) hour were applied with defined inoculums size. The effect of *Allium sativum* (garlic extract) on the growth of probiotic bacteria was evaluated, measurement of *Lactobacillus acidophilus* growth curve was done by reading optical density using spectrophotometer at specific wave length (OD600), each 2 hr for 24hr after and before adding garlic extract. For analyzing inhibitory activity of *Lactobacillus acidophilus* with the *Allium sativum* as prebiotic substance, results showed that *Lactobacillus acidophilus* propagated in MRS fortified with 20% and 30% v/v garlic extract with incubation period 24 hr compared to propagating of *Lactobacillus acidophilus* in MRS alone, by giving the highest inhibition zone. It was concluded that *Lactobacillus.acidophilus* isolate can grow well and exhibit good effect against Gram-negative bacteria in a medium containing garlic extract (that is added as a substrate supporting probiotic growth and activity). also it was clear that filtrate of *Lactobacillus .acidophilus* isolate that propagating in MRS broth fortified with 20% garlic extract at 48 hr incubation period produce antibacterial effect better than 10% but as same effect as in 30% against pathogenic bacteria, From above results it was concluded that prebiotic treatment enhance the growth of *Lactobacillus acidophilus* especially at 24 hr. this may due to fructooligosaccharide (FOS) content in garlic have the best effect on the growth of *Lactobacillus. acidophilus* bacteria, when the FOS content in garlic was about 3.34% (b/b). but less effect was observed after 48 hr incubation period, and also when propagated in MRS without prebiotic treatment, and which may due to highly decrease in pH (less than 3) and this may cause inhibition the growth of *Lactobacillus acidophilus* cells and hydrolysis of its cells.

Plant virus diseases and their detection methods in Iraq.

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Abstract:

Until the 2000s, the presence of viruses in the Iraqi environment has not been studied intensively. This is due, in part, to the obvious shortage in appropriate financial support for virus research, and the lack of effective detection methods that would enable viruses' detection in different regions across Iraq. In 2000s, sensitive methods for detecting viruses have resulted in a clear expand of plant virus research in Iraq. This review focuses on plant viruses found in Iraqi environment and their detection. Plant viruses from at least 26 different genera have been found to infect economically important crops or the surrounding weeds in the Iraqi environment so far. Diagnosis and detection of plant virus diseases in Iraq has included serological laboratory tests since the 1970s. With the availability of molecular biology and sequencing, the development of laboratory tests improved at an amazing rate for plant viruses. Sequencing and PCR-based detecting methods have been used to identify and compare groups of viruses. Combinations of Biological assays, ELISA and molecular techniques are used to improve sensitivity of diagnosis and to avoid false results caused by inhibitors of PCR reactions that often found in plants. The application of these techniques in plant virology has greatly improved our ability of plant virus diseases diagnosis and is increasing our understanding of, the ecology and epidemiology of plant viruses in Iraq. Since we are still in the course of applying new detection techniques for plant viruses in Iraq, it is reasonable to expect that the list of plant viruses found in Iraq will thereby be expanded considerably.

Molecular detection of a leaf curl disease complex infecting zucchini squash in Iraq.

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Abstract:

Squash leaf curl disease has become one of the most devastating virus diseases infecting cucurbits worldwide. It can cause significant losses on squash production both in quantity and quality. The study was aimed at the characterization of begomoviruses causing leaf curl symptoms on zucchini squash based on molecular approaches. Leaf samples were collected from symptomatic plants in zucchini squash growing area at Baghdad/Al-Jadriya (n=3), Baghdad/Yusufiyah (n=14) and Babylon/Jibela (n=7). Total DNA was extracted from collected samples using commercial DNA extraction kit. PCR amplification was performed to screened extracted samples for begomovirus infection using Deng a begomovirus specific primer set. DNA fragment of expected size were sequenced and comparison to equivalent GenBank sequences. Sequence analyses were performed using MEGA X and SDTV1.2 software packages. Sequence comparison confirmed the detection of two begomoviruses; namely, *Tomato leaf curl Palampur virus* (ToLCPMV) and *Squash leaf curl virus* (SLCuV), in symptomatic zucchini samples when

shared 99.14 and 99.50% maximum nucleotide (nt) identities with coat protein CP gene, respectively. All samples collected from Baghdad/Al-Jadriya were ToLCPMV infected while samples collected from Babylon/Jibela were SLCuV infected. Moreover, mixed infection of the two viruses was detected in all zucchini squash collected from Baghdad/Yusufiyah. Neighbor joining (NJ) Phylogenetic analysis confirmed the relatedness when diverged sequences in separated groups based on CP gene. The high nt identity suggests the 2 begomoviruses may recently be introduced to Iraq and could be a serious threatening to squash cultivation. Rapid action and precaution procedures must be taken to protect zucchini and other crops against begomoviruses in Iraq. Furthermore, the use of resistant varieties in Iraq may be hampered due to mixed infection.

Effectiveness of MgO Nanoparticles in the Management of Thyroid Hormone Level.

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Abstract:

Hypothyroidism is a clinical dysfunction resulting from deficiency of thyroid hormones or, more rarely, from their impaired and is a great risk for human health.

Nanotechnology offers a way to develop new inorganic biomedical agents. Nanoinorganic metal oxide has a potential to control biological contaminations. Magnesium oxide nanoparticles are an important inorganic oxide and have been widely used in many fields. Many studies have shown that nanoparticles have good biological activity. Therefore, in this paper, the main synthesis method, characterization by several techniques, including Fourier transform infrared spectroscopy, Atomic Force Microscope, scanning electron microscopy and X-Ray Diffraction and the effect of magnesium oxide nanoparticles on serum levels of T4 hormone was investigated. Serum levels of T4 in experimental showed a significant decrease at 100 ppm compared to control group. Other concentrations did not change significantly compared to control group. Magnesium oxide nanoparticles at concentration of 100 ppm reduced the serum T4 level.

Keywords: Synthesis, Nanoparticles; Magnesium Oxide; Thyroide.

The effect of green synthesized zinc oxide nanoparticles on the expression of *strA* gene in *Streptomyces* isolates

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Abstract:

The aimed of the study is to investigate the effect of ZnO nanoparticle on the expression of *strA* gene in *Streptomyces* spp. The aquatic extracts of *Aloe vera* leaves obtained and ZnO nanoparticles prepared then detected and characterized using FTIR, SEM AND AFM. The RTq-PCR method has been used to examine the expression levels of *strA* gene in two different characterized of *Streptomyces* isolates (Be1 and B3-4) under effect of different concentration of ZnO nanoparticles (1.0, 1.5 and 2 mg/ml). The result showed a difference in the response of *strA* gene to different concentration of ZnO nanoparticles but the expression of *strA* gene increased with (1.5 mg/ml) concentration in both of isolates (Be1 and B3-4). The real time qPCR results showed that the expression increased with the increasing of the concentrations OF ZnO but up to limited.

The role of chitin and chitosan in improvement of plant growth and antifungal activity.

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Abstract:

The study aimed to improve the seed germination of cowpea, basil and cucumber by employing chitin and chitosan and to evaluate their effects on some plant pathogenic fungi. The results showed encouraging effects of chitin and chitosan on seed germination of the three crops. Cowpea had a greater response to chitin or chitosan with a significant difference in comparison to the control samples. Their germination percentages were 80% and 87% when treated with a concentration of 1mg/chitin or chitosan respectively. The germination percentages of basil seeds were 91% and 94% when employing 1 mg/ml chitin or chitosan respectively in comparison to the control sample of 76%. On the other hand, the germination percentage for cucumber seeds was 96% for both 1 mg/ml chitin and chitosan as comparison to 76% for the control sample. The germination percentage was decreased with higher of concentrations of chitin or chitosan. The highest percentage of inhibition of pathogenic fungi was 70.5% for *Macrophomina species* for both 4 mg/ml chitin and chitosan. The lowest percentage of inhibition at a concentration of 1mg chitin was 8.23% for *A.niger*. While in the presence of 1 mg/ml chitosan the lowest inhibition percentage was 11.76% for *Rhizoctonia solani*. It can be concluded that the percentage of germination for each of cowpea, basil and cucumbers decreased with increasing concentrations of chitin or chitosan. The percentage of inhibition of pathogenic fungi was increased with increased concentrations of chitin or chitosan.

Keywords: seed germination, plant pathogens, biodegradation polymers, Antifungal activity.

Effect of some growth regulators on the shoot multiplication of tulip (*Tulipa gesneriana* L. cv. Arma) plant by tissue culture technique.

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Abstract:

The axillary bud that cultured on MS medium supplemented with 1.0 mg. L⁻¹ benzyl adenine and 0.5 mg. L⁻¹ naphthalene acetic acid recorded a significant increase in the percentage of response to shoot multiplication, reaching 83.33% after eight weeks of culture. But apical buds did not respond to shoot multiplication. The axillary buds growing on the MS medium with a concentration of 1.0 mg L⁻¹ benzyl adenine recorded an increase in the shoot number and their lengths compared to other treatments reached 5.33 shoots/explant and 5.67 cm, respectively. While the treatment at 0.5 mg L⁻¹ benzyl adenine recorded the lowest percentage to shoot multiplication response, the shoot length and the number of leaves per shoot (61.0%, 2.33 cm and 1.67 leaves per shoot, respectively). The results of the study showed that bulb formation after eight weeks from culturing when shoots were cultured on the MS medium supplemented with 1.0 mg L⁻¹ benzyl adenine and 0.5 mg L⁻¹ naphthalene acetic acid.

Keywords: benzyl adenine; bulb; naphthalene acetic acid; axillary bud.

The Role Aqueous, Phenolic Extracts of *Cinnamomum cassia* and *Salvia officinalis* on Cyclophosphamide-Induced Histopathology Alteration in Mice.

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Abstracts:

The study was aimed to evaluate productive effects of aqueous, phenolic extracts of *C. cassia* and *S. officinalis* on histopathological alteration in mice which induced by Cyclophosphamide (CP) drugs. In the experiment, 32 animals were taken and divided into 4 groups. Each group contain of 8 mice. Group I negative control with normal saline injected intra peritoneal. Each group from (II to IV) are injected with 40 mg/Kg B.W. CP intra peritoneal on 0.1ml. While group II, and III animal administration with 200 mg/Kg B.W. aqueous extracts, 10 mg/Kg B.W. phenolic extract respectively. Group IV positive control without plants extract treated. After that, the mice in these groups were sacrificed after 21 day, then abdominal lumen was open, the body organs liver and kidney were removed and separate for histopathological study. From this review can be concluded the mice which treated with CP drugs, liver sections observed hepatocytes damage, alteration of shape, congested sinusoidal space, damage and pyknotic of nuclei, and hemorrhage, while kidney sections showed cytoskeleton disturbance, necrosis, hemorrhage, nuclear injury, and Bowman capsule damage, aqueous, phenolic extracts of *S. officinalis* and *C. cassia* have an efficient role to enhance histopathology alteration in mice which induced by CP drugs.

Key words: Cyclophosphamide, Aqueous extracts, Histopathology, *C. cassia*, Phenolic extracts, *S. officinalis*.

The Role of Biotechnology In Produce Secondary Metabolites (SM)

From Some Medicinal Plants.

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Abstract:

Medicinal plants also called medicinal herbs are considered as a rich resources of ingredients which can be used in drug devolepment. These plants have been used for human and animal health since prehistoric times, as well as to give flavor and taste to food. However, with the development of technology, pharmaceutical and food industry, the use of secondary metabolites in these plants has increased rapidly. The study will continue in order to solve problems of some medicinal plants like germination problem and raise the percentage of SM in plant by using conventional agriculture or by using biotechnology methods which help as to produce SM in every season, in the short time and in amounts which are at the level of international standrds without depending to the ecological factors. Also the biotechnology methods are useful to collect medicinal plants from different place of the world and produce healthy (SM) which don't contain any diseases - insects and produce them without need to large area for breeding or production.

Keywords: secondary metabolites, Biotechnology, Medicinal Plants, Varibility, Hypericum, Coriander

Study the therapeutic effect of truffles on *Rhodotorula* spp. in vivo

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Abstract:

In this study, the antimicrobial activity of *Terfezia claveryi* was evaluated *in vivo*. The laboratory animals were divided to four sets, each set contains (8) mice. The sets were as follows: First set of mice were received 2 ml/kg body wt. of normal saline as a control. Second set of mice were treated with 2ml/kg body wt. of fungal broth (*Rhodotorula* spp). Third set of mice were treated with 2 ml/kg body wt. of aqueous extract of *Terfezia claveryi*. Forth set of mice were treated with 2ml/kg body wt. of fungal broth and also treated with 2 ml/kg body wt. of aqueous extract of *Terfezia claveryi*, daily for two weeks orally using gavage tube. The therapeutic effect of aqueous extract of *Terfezia claveryi* was tested by measuring the serum level for AST, ALT, and ALP. Also histopathological sections for liver and kidney were examined. The results of liver enzymes activity showed that the statistical analysis of ALP serum level, showed a significant ($p < 0.05$) increase in this parameter in the fungal broth treated set (71.40 ± 6.25) IU/ml and serum GOT (231.00 ± 9.42) IU/ml when compared with other three sets. In addition, there were a non-significant ($P > 0.05$) differences in serum GPT level among all four experimental sets. As for Renal function tests results showed a significant ($P < 0.05$) increase in the level of B. urea in the fungal broth treated set (28.51 ± 3.10) mg/dl when compared with other three sets.

In conclusion, the aqueous extract *Terfezia claveryi* has been found to have an antimicrobial activity against infections caused by *Rhodotorula* spp

Key words: Truffle, Antimicrobial activity, Edible mushroom, *Rhodotorula* spp., Therapeutic effect

Non Chlorophyll Accessory Pigments In Cyanobacteria: Simultaneous Extraction, Separation, And Maximization.

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Abstract:

Cyanobacteria are considered as a sustainable feedstock for the production of biochemically active compounds such as phycobiliproteins (PBP). In this study, 12 different cyanobacteria isolated from hot-spring water resources in Ankara prov-ince were evaluated for their PBP production efficiency. Morphological analysis and Sanger sequencing revealed that 5 of the strains belong to *Nostoc* genus, 3 of them belong to *Anabaena*, and others belong to genus *Trichormus*, *Nodularia*, *Chlorogloeopsis*, and *Nodosilinea*. Isolated strains have been maintained in nitrogen lacking BG-11 growth medium during the thesis study. Total PBP content of *Trichormus sp. IMU26* and *Anabaena variabilis IMU8* were found as 23.2% and 17.3% while it was lower than 15% in all other strains studied. The following studies were carried out to see the impact of nitrogen and phosphorus availability on PBP production on diazotrophic cyanobacteria isolated from hot-spring water resources. For this aim, the strains *Trichormus sp. IMU26* and *Anabaena variabilis IMU8* were incubated in N-replete, N-lacking, and N-P-lacking BG-11 growth medium. Results showed that nitrogen supply resulted in higher soluble protein and saccharide content but a lower growth rate and PBP production in *Trichormus sp. IMU26* and *Anabaena variabilis IMU8*. Short term (6 days) N-P-deprivation induced PBP production with no clear change in growth while growth and PBP content decreased in the longer incubation period (12 days). Fourier transform infrared spectroscopy results refer that membrane-bound oligosaccharides may have regulatory roles for PBP production in *A. variabilis IMU8* during long term diazotrophic cultivation. Moreover, rapid induction of zeaxanthin and β -carotene production and a slight reduction of echinenone and canthaxanthin levels might be associated with increased PBP levels in short term N-P-deprivation of *Trichormus sp. IMU26*. In conclusion: the thermal diazotrophic cyanobacteria *Trichormus sp. IMU26* and *Anabaena variabilis IMU8* were introduced to the literature as potential candidates for pilot scale PBP production. Isolated from hot-spring water resources, which differ from sea and spring waters with their unique mineralization and temperature levels, these two cyanobacteria grow well in N-lacking growth medium under room temperature and the contamination risk is fairly low.

Keywords: *Anabaena*, Cyanobacteria, Nitrogen, Phosphorus, *Trichormus*, Phycobiliproteins.

Chemical analysis of methanolic extract of *Equisetum arvense* L.(horsetail) from Northern Iraq.

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Abstract:

The present investigation is about *Equisetum arvense* L. (Family: Equisetaceae) to determine chemical content (total flavonoids) in aerial parts(mature sporophyte) collected from Chemi Rezan region in Sulaimaniyah district ,in Iraqi Kurdistan during May 2016. The methanolic crud extract of the fern was prepared by using Soxhlet apparatus to used for phytochemical analysis. The qualitative analysis for the *E. arvense* extract was contained active compounds: alkaloids, saponins, tanins and flavonoids. Four flavonoids : kaempferol, aempferol-O-3- glycoside, leutolin, and quercetin were

identified in *E. arvensis* by using HPLC technique. The results show that total flavonoids concentration in methanolic extract of aerial parts of *E. arvensis* was 179.5 mg /ml.

Antioxidant and antihyperglycemic activity of *Arthrospira platensis* (*Spirulina platensis*)

methanolic extract: *in vitro* and *in vivo* study.

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Abstract:

The present study evaluated different crude extracts of *Spirulina platensis* for its antioxidant and antidiabetic potential. The results showed that all *S. platensis* extracts exhibited antioxidant activity by using DPPH (2,2-Diphenyl-1-picrylhydrazyl), reducing power and total antioxidant capacity assays; in addition to its antidiabetic activity which was dependent on the used solvent. Among the tested extracts, *S. platensis* methanolic extract exhibited the highest antioxidant activity for all the tested assays and the maximum inhibitory effects for α -amylase (96.46%) and α -glucosidase (97.42%) diabetic enzymes. *Spirulina* methanolic extract showed no toxicity on normal fibroblast cell lines using MTT assay. Gas Chromatography-Mass Spectrum (GC-MS) analysis of the same extract revealed the presence of different bioactive compounds mainly phytol, 1-monolinoleoylglycerol trimethylsilyl ether, cholestan-3-ol, 2-methylene-($3\beta,5\alpha$) and fatty acids. These compounds might be acted synergistically to exert their obtained antioxidant and antidiabetic activity. For the *in vivo* study, administration of *S. platensis* methanolic extract (at 15 and 10 mg/Kg body weight (BW)) caused antihyperglycemic activity by reducing the elevated blood glucose level. A remarkable decrease in different liver, kidney functions and hyperlipidemia related to diabetes were also detected. The same extract treatment also showed enhancement of body weight and total protein, albumin and hemoglobin level as compared with the alloxan induced diabetic rats. Furthermore, treatment of diabetic rats with the same extract improved liver and pancreas histopathological disorders related to diabetes. These results recommended using *S. platensis* methanolic extract in developing medicinal preparations for treatment of diabetes and its related symptoms.

Keywords: Antihyperlipidemia, α -glucosidase, α -amylase, Gas Chromatography
Mass Spectroscopy, Histopathological disorders.

Effect of water extract from heart of palm *Phoenix dactylifera* L. Anti *Leishmania* species *Leishmanial tropica* and *Leishmanial donivani*.

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Abstract:

The chemical content of the date palm trees was estimated by the *Phoenix dactylifera* L and its vital efficiency. The percentage of moisture, protein, fat, carbohydrates, ash and fiber was 84.79, 3.062, 0.82, 8.26, 0.960 and 5.20% respectively, and its high content of important mineral elements For human health, calcium, phosphorus, potassium, magnesium, sodium, sulfur, cadmium, cobalt, chromium, copper, iron, manganese, lead, zinc were observed in different concentrations. The presence of alkaloids,

, tannins, flavonoids, saphones and phenols was found to be 45.97 mg / g and flavonoids 0.099 mg / g and tannins 18.02%. The sugars were separated and analyzed using high-performance liquid chromatography (HPLC) and found to contain high fructose, 70, 38.15, and 10.604 respectively. Fatty acids were identified using the GC gas chromatography device for gammar oil containing Palmitoleic acid, Linoleic acid and Linoleic acid, respectively. Acid Oleic was the highest form and reached 50.59%. Vitamin B1, vitamin B6, vitamin C and Folic acid were found to be 0.5208, 0.5201, 0.1020 and 0.1790 ppm, respectively. *Lishmania tropica* and *Leishmanial donivani* were studied for the cactus extract. The highest inhibitory effect was *L. tropica* with a concentration of 100 000 mg / ml in the extract which was 85.486% followed by the concentrations used 5000, 2500, 1250 and 500 mg / ml. High inhibitory activity with high concentrations and lowest concentrations. The inhibitory rate of extract 82.799, 79.152, 76.369, 75.81 and 75.50%, respectively, had a significantly more pronounced inhibitory effect at high concentrations. The effect of the water extract of the date palm was less than 100 mg, And the highest inhibitory effect of the extract at 500 mg / ml was 38.09 followed by the concentrations of 1000 and 1250 mg / ml Reaching 37.57% and 27.94%, respectively.

Keyword: Extract of palm heart, Anti Leishmania

Phytoremediation of Heavy Metals: An Omics Approach Towards Climate-Resilient Smart Soil Management.

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Abstract:

The recent developments in phyto-extraction of metals from soil are an important milestone in the phytoremediation technology. Plants uptake metals from soil and accumulate them, so that the soil is detoxified from the harmful effects of metal pollution. The plants which have ability to accumulate high concentration of metals in their different parts are called as hyperaccumulators. There are more than 400 plants which are reported to be hyperaccumulators. They belong to different genera and grow on variety of soils having metals like rocks, mining and smelting land, etc. As the hyperaccumulators have large variation, it is obvious that the mechanism is regulated by multiple genetic factors. Metal binding proteins (MBP) and peptides are the molecules having ability to bind with ions of heavy metals like Cd, Ni, As, Pb, etc. MBPs remove heavy metals from the environment so that their hazardous effects are eliminated. MBPs have been exploited to enhance the metal accumulation. There are several MBPs and peptides are known like, metallothioneins (MTs), Phytochelatins (PCs), CdBP, CP, HP, etc. They eliminate heavy metals from the environment by making protein – metal ion complexes. Recently, transgenic plants have also been developed by using MTs from various sources for phytoremediation of heavy metal pollutants. Now, the use of genetically modified plants for phytoremediation is getting popularity due to number of reasons. Thus, use of MBPs and peptides to eliminate heavy metals is very important and the mechanisms of MBPs and peptides, their applications and future need to be explored. This information may be a way forward to climate-resilient smart soil management.

Keywords: Phytoremediation, Heavy metals, OMICS, Climate, Hyperaccumulator plants, Metal binding proteins, Soil management

Phylogenetic tree of some nosocomial bacteria isolated from Ramadi Teaching Hospital.

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Abstract:

The aim of this study is to detect the phylogenetic tree of some nosocomial bacteria isolated from Ramadi Teaching Hospital. In this study, sixty-five samples were taken from different locations of the Ramadi Teaching hospital and were cultured on different media. It was found that there are 40 bacterial isolates and 25 fungal isolates after cultured on different media. Pure colonies were obtained after re-culture for bacterial isolates and then extracted the DNA from the 40 isolated samples and measuring its concentration. Using the specific primer for 16S rRNA genes, the samples were amplified by a PCR. All the isolated were sent to work the sequences and know the bacterial species, as it appeared that there is a variation between the genera for different locations and also it was found that there is a variation from the comparison with the global strains of the NCBI and this indicates an evolution in some of the isolated strains and their resistance. It is important to mention that all samples isolated from the intensive care unit (ICUs), neonates, laboratories, emergency, and kitchen contain variations in the sequences compared with NCBI. The results detected the high similarities in genetic distance between Iraqi isolates and other global strains.

Keywords: Nosocomial infections, Phylogenetic tree, 16S rRNA, Transition, Transversion.

Characterization of *Streptomyces* spp bacterial isolates from Tigris river sediments in Baghdad city with GC-chromatography– mass spectroscopy.

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Abstract:

Streptomyces are considered the most important bacterial source for natural antibiotics, so this study aims to isolate *Streptomyces* spp. from Tigris River sediment soil samples and focus on their bioactive compounds production and characterization. About 42 (84%) *Streptomyces* spp. have been isolated and they showed different morphological characteristic. Out of them 17 (40.47%) have good antibacterial activities against *Staphylococcus aureus* and *Escherichia coli* by using primary screening. Secondary screening for bioactive compounds production by agar diffusion method showed that 14 (63.63%) isolates out of 17 isolates have a very good zone of inhibition against *S. aureus* and *E. coli*. Samples with the highest antibacterial activities (21, M5, N⁻ and D⁻) were chosen for optimization and characterization. Gas chromatography – mass spectroscopy to detect the structure of the compound was performed by using intracellular (biomass) extract due to more antagonism efficiency than that observed in extracellular crude extract. Intracellular crude extract analyzed by Gas chromatography – mass spectroscopy showed a total of 49 peaks observed in 4

isolates, isolate M5=14 peaks, isolate D=11 peaks, isolate N= 20 peaks and isolate 21= 4 peaks. Isolate D, which showed the highest zone of inhibition in secondary screening than that in other isolates, is associated with the most prevalence active compounds like the Decane derivatives, in addition to Triadimenol; Azetidine, 1-(1,1-dimethylethyl)-3-methyl; Hexanoic acid, 2-ethyl-, 2-ethylhexyl ester and 3,3,7,7-Tetramethyl-1,5-diazabicyclo[3.3.0]octane. While isolate 21, has less peaks in comparing with the other samples, with great occurrence in components: 1-Dimethylamino-hexane with molecular formula C₈H₁₉N and molecular weight 129 and Propamocarb with molecular formula C₉H₂₀N₂O₂ and molecular weight 188, in addition to many *volatile organic compounds*. The greatest components of isolate M5 were Triadimenol and 3,3,7,7-Tetramethyl-1,5-diazabicyclo[3.3.0]octane, in addition to the presence of Decane derivatives; amine compounds and Vitamin E. Isolate N showed a great occurrence with components Triadimenol and Azetidine, 1-(1,1-dimethylethyl)-3-methyl with a molecular formula C₈H₁₇N and with a molecular weight 127; also the presence of an important component Hexanoic acid, 2-methyl- with the molecular formula C₇H₁₄O₂ and with molecular weight 103 which has been considered as an essential component of muramycin antibiotic; compounds which contain Benzene ring.

Synthesis of chitosan and gold nanoparticles and study their effect on some fungi responsible for biodeterioration.

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Abstract:

Background: Bio-deterioration phenomena constitute a variety of physical and chemical alteration processes in various materials, such as objects reflecting our cultural heritage. The main cause of damage to cultural heritage objects made of or supported on paper is fungal species. In the paper-based industry, the activity of microbes affects not only the appearance of stains, but also the physical and chemical structure. Nanoparticles were used, its effect was studied on most dominant fungus causing deterioration. Thus, it can prevent papers from bio-deterioration. **Objectives:** This article aimed to study the effect of chitosan and gold nanoparticles on some fungi causing bio-deterioration. **Methods:** Different concentrations of different sizes of chitosan and gold nanoparticles was prepared, characterized and its antimicrobial effect was studied. The characteristic SPR of AuNPs was recorded by absorption spectroscopic technique using a double beam UV–Vis–NIR spectrophotometer within the scanning range of 200–800 nm. Then Dynamic Light Scattering (DLS) technique was utilized to estimate the average particle size distribution that was measured by zeta sizer. Isolation and identification of fungi causing deterioration of paper and preparation of gold and chitosan nanoparticles each with 2 sizes and testing the action of these nanoparticles on isolated microorganisms and detecting MIC. **Results:** Minimum Inhibitory Concentration (MIC) of chitosan nanoparticles was 150 mg/ml and for gold nanoparticles to be 100 mg/ml on *Aspergillus ustus*. **Conclusion:** Our results suggest that gold and chitosan nanoparticles could antifungal effect against fungi responsible for deteriorating papers.

Keywords: Bio-deterioration, fungi, nanoparticles, chitosan, gold

A new laboratory derived microbial silver nanoweapon against different bacteria.

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Abstract:

The utilization of silver as a disinfecting agent is not new, and silver compounds were shown to be effective against both aerobic and anaerobic bacteria by precipitating bacterial cellular proteins and by blocking the microbial respiratory chain system. The chief structural differences lie in the organization of a key component of the membrane, peptidoglycan. Gram-negative bacteria exhibit only a thin peptidoglycan layer (<2–3 nm) between the cytoplasmic membrane and the outer membrane; in contrast, Gram-positive bacteria lack the outer membrane but have a peptidoglycan layer of about 30 nm thick. Nanoparticles show good antibacterial properties arising from their large surface area to volume ratio providing desirable contact with bacterial cell membranes. The mechanism of bactericidal effect of silver ions and AgNPs on micro-organisms remains to be understood. Several studies propose that AgNPs may attach to the surface of the cell membrane disturbing permeability and respiration functions of the cell.

The objective of this research was to develop a reliable, ecofriendly procedure for a production of microbial silver nanoparticles, and determination of possible antibacterial activity against different bacterial strains.

The present study investigated the biological synthesis, characterization and antibacterial activity of microbial silver nanoparticles (Ag NPs). The production of Ag NPs was performed using the culture supernatants of *Bacillus subtilis* FNS-BCC 28, *Bacillus pumilus*, *Staphylococcus aureus*, *Staphylococcus citrus* FNS-BCC 61 from The Collection of Microorganisms of Department of Microbiology and Microbial Biotechnology, Institute of Biology, Faculty of Natural Sciences and Mathematics against different bacterial strains.. The antibacterial activity of the AgNPs was evaluated against the relevant bacteria and susceptibility tests on agar demonstrated the existence of antibacterial activity of the nanoparticles from tested bacteria.

In conclusion, we can say that microbial synthesis of nanoparticles has a potential to develop simple, costeffective and eco-friendly methods for production of technologically important materials. In this study it is shown that the production rate of the nanoparticles depends on the initial concentration of AgNO₃. Microbial synthesis of nanoparticles represent a green approach that interconnects nanotechnology and microbial biotechnology. Tested bacteria were found to be a good producer of silver nanoparticles by demonstrating a good antibacterial activity against all bacterial strains.

Keywords: microbial silver nanoparticles, antibacterial, synthesis, nanotechnology.

The early diagnosis of cancer disease according to the point mutation in the first Exon of CRP gene.

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Abstract:

Early diagnosis of cancer and therefore early treatment are the best ways to reduce the number of deaths and increase the number of survivors of the disease .For this reason, the early diagnosis for cancer

makes the chance of survival greater and also to avoidance of severe treatments. In this work, the genetic material was extracted from the blood samples of two groups: healthy persons(control group) and patients with breast, head, kidney, lung, and bone cancer, which diagnosed by the electrophoresis. The genetic material was mixed with primers to amplified specific encoded regions in the CRP gene that determined by using the DNA sequencers, which showed that point mutation was find in all the patients and that they were not presented in healthy person, that could be used for early diagnosis of the cancer.

Functional Properties of Catfish Skin Collagen Hydrolysates

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Abstract:

Collagen hydrolysates were obtained from catfish skin collagen hydrolysis using catfish collagenase, pepsin and trypsin individually and mixed for 15-300min. The degree of hydrolysis, antioxidant activity based on, DPPH radical-scavenging activity (RSA), and reducing power (RP) for all obtained hydrolysates were studied, then the collagenase hydrolysate was (CH) was selected to be evaluated for antibacterial activity, functional properties including solubility, emulsification and foaming properties besides the toxicity. The highest values for RSA (72.5%) has been noticed when DH reached (24.30%) after 30 min. of hydrolysis by collagenase (CH). The water and oil holding capacities for this hydrolysate was compared to that for ASC (acid soluble collagen) and PSC (pepsin soluble collagen), the results showed that the values recorded by CH were significantly higher than ASC & PSC. The molecular weight of CH peptides ranged from 180 to 11 Da. as analyzed by SDS- PAGE. The toxicity assay result revealed that CH is safe for human consumption. There was no antibacterial function for CH toward *E.coli* and *S. aureus*. At concentration of 2mg/ml. This study suggests that catfish collagen hydrolysate could be a good natural alternative for synthetic antioxidants in food industries.

Keywords: antioxidant, antimicrobial, SDS- PAGE, collagenase, toxicity, fish waste

Rapid and Sensitive Quantitative & Qualitative detection of *P.aeruginosa* in contaminated and non-contaminated soil with oil residues targeting *gyrB* gene using Real-time PCR.

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Abstract:

Aims: Comparison of *P. aeruginosa* counts that are found in contaminated and non- contaminated soil with oil residue using a real-time quantitative PCR by Direct DNA extraction from soil samples as well as indirect DNA extraction from bacterial isolates. Material and methods: Sampling was collected randomly from ten different regions of the Ministry of Science & Technology during the period from October to December 2019. Twenty soil samples was investigated for hydrocarbon tolerance in Bushnell Haas broth containing 1% (w/v) crude oil as sole carbon source, and then isolates diagnosed based on phenotype, microscopic, and biochemical tests, were used. Direct DNA extraction from soil samples using DNeasy Power Soil Pro Kit for the rapid detection of *P. aeruginosa* from soil, as well as wizard DNA extraction method from bacterial isolates Quantitative and Qualitative PCR was performed with

The Magnetic Induction Cycler (Mic), DNA extraction from soil and bacterial isolates amplified and detected using fluorescent reporter dye probes specific for *Pseudomonas aeruginosa* DNA and Internal Control IC. Results and Conclusion: A total of twenty bacterial isolates were obtained from the different soil samples according to phenotyping tests, and also we obtain 20 DNA samples from direct DNA extraction from soil, the results of purity were (1.70- 1.95) for wizard method and (1.46- 2.35) for direct extraction from soil. *P.aeruginosa* counts in contaminated soil samples (8×10^7 Copies/ μ L) showed higher compared with the non- contaminated soil samples (2×10^2 Copies/ μ L) at maximum using qPCR and soil DNA. specific and rapid assay (2–3 hrs) by targeting *gyrB* gene using Rt-PCR for the detection of *P. aeruginosa* in contaminated and non-contaminated soil samples, combined with optimized sample collection methods and sample processing, so the direct DNA extraction from soil was possible while achieving the desired sensitivity of the method.

Basic Preparatory Procedures for Commercial Production of Arachidonic Acid from the Fungus, *Mortierella alpina*

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Abstract:

Introduction: People become conscious about their well-being, adopting healthy eating habits. Health awareness may be further accelerated after facing the spread of incurable diseases and pandemics. However, due to economic recession triggered by Covid-19 poor people are excluding fish, poultry and meat from their diets which are source for polyunsaturated fatty acids (PUFAs). Time has come to emphasize the significance of producing and incorporating arachidonic acid (omega-6 PUFA) in diet for its benefits for the function of immune and neurological systems for elders and infants. There is a gap is between the market need and ARA availability in Egypt. Globally, forecasts predict that, by 2025, the industrial production of ARA might reach 410 thousand tons and it will not be satisfactory. AIM: A desire was raised to establish economical procedures for ARA production using an *Mortierella alpina*, a soil fungus that produce ARA in industrial amounts. Methods: Taxonomic identification of isolated *M. alpina* was performed. Cryopreserving protocols were developed to store the fungus in -80°C . Liquid media components and fermentation conditions were adjusted. The fungal biomass was determined using gravimetric assays then lipid analysis was carried out. Results: Based on the morphological features, and internal transcribed spacer (ITS) region, the fungal strain was identified as *M. alpina*. Successful cryopreservation using glycerol ensured the long term storage of *M. alpina* in -80°C . Cultures were maintained at 25°C for 8 days in media composed of potato extract, glucose with/without the addition of 1% yeast extract (YE), or media composed of YE, glucose and minerals. The highest biomass weight (1.4 g/100 ml) was achieved with potato/glucose medium supplemented with 1% YE. Conclusion: Paving the road for Arachidonic acid production in Egypt will allow the accessibility of such integral fatty acid to common, underprivileged people and their children, avoiding unnecessary health problems.

Evaluation of Antagonistic Potential of *Lactobacillus* Isolates against Phytopathogenic Fungi and Pathogenic Bacteria *in vitro*.

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Abstract:

The present research was conducted to evaluate the antagonistic potential of lactic acid bacteria (LAB) isolates *in vitro* using agar well diffusion method. In this research, four LAB isolates were selected to investigate their antifungal and antibacterial activity against two phytopathogenic fungi and four pathogenic bacteria. Cell-free supernatants at different fold concentrations (50, 25 and 12.5) ml/l of the four LAB isolates were employed. It was found that all cell-free supernatant folds of the four selected LAB isolates were able to inhibit the growth of all phytopathogenic fungi (*Fusarium oxysporum* and *Alternaria* sp) and pathogenic bacteria (*E. coli*, *Klebsiella* sp, *Salmonella* sp, *Staphylococcus aureus*). However, the degree of inhibition varied depending upon LAB isolate and microorganism involved. Some LAB isolates revealed effective inhibition activity while others exhibited lower response. Among different LAB isolates, *Lactobacillus bulgaricus* exhibited the strongest antifungal activity against *Fusarium oxysporum* in all three cell-free supernatant fold concentrates. On the other hand, *L. paracasei*, *L. acidophilus* and *L. rhamnosus* cell-free supernatants showed higher inhibition activity against pathogenic bacteria whereas *L. bulgaricus* was least active. *E. coli* was the most inhibited bacterium by *L. paracasei* and *L. acidophilus*. LAB cell-free supernatants also showed wide spectrum inhibition activity against both gram positive and gram negative bacteria. It was also found that the third fold concentrate showed higher inhibition activity than first and second fold concentrates against all tested microorganisms, except the second fold concentrate of *L. acidophilus* which showed higher inhibition effect against both tested fungi. Antibiotics were used to investigate

Key words: Lactic acid bacteria (LAB), antagonism, well diffusion method, phytopathogenic fungi, pathogenic bacteria, cell free supernatant.

Study the effect of poly aromatic hydrocarbons by using biochemical tests in chicken embryos.

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Abstract:

The major liberation of polycyclic aromatic hydrocarbons (PAHs) into the atmospheric, aquatic, and earthly ecosystems originates from human race activity such as petroleum refining and other industrial processes. PAHs cause several effects at low doses in animals in different ecosystem. The aim of this study was to assess the treatment of AL-Dura refinery wastes before being discharged to the river by studying their effects on the liver and renal functions in chicken embryos which used as a model exposed *in vivo*. Nightly local egg was incubated horizontally at $37.5 \pm 0.5^\circ\text{C}$ with a relative humidity of 65% in an egg incubator. Thirty eggs were used for hatchability study, were as other sixty egg were used for biochemical analysis. On day 15th of incubation, the eggs were randomly divided into three different treatment groups and marked for identification. The first A and second group B were exposed by injections with the residues of AL-Dura refinery (after treatment) and at the concentration of (2, 4) ppm respectively and 0.2 ml / egg into the air cell with sterile siring, then sealed with melted paraffin. Control group was injected with Olive oil. On day 18th of incubation the samples of blood were collected from embryos. Liver function was measured using a biochemical assay with diagnostic kits of specific enzymes (ALT, AST, and ALP). Keratinine and urea level were measured to asses renal function. The result showed a signenificant increase $p \geq .05$ in the level of liver enzymes (ALT, AST), keratinine and urea by increasing the exposure dose, were as there

is a decrease in the level of ALP with the increasing of exposure dose. Hatchability rate were significantly ($p < 0.05$) decreased with dose exposure increase. Mortalities in the chicken embryos of all groups showed dose-dependent relationship. That shows there are a clear effect of oil waste on liver and renal function, and an indication of the inefficient treatment of these waste before being discharged to the river.

Key word: PAHs, chicken embryos, ALT, AST, ALP.

Impact of Water Pollution on fish quality in Lake Manzala, Egypt.

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Abstract:

Water pollution is a global problem which has truly impacted on food safety which represents a critical threat to human health. The present study aimed to investigate Physico-chemical properties of water samples and Bacterial quality of both water and fish sample (*Oreochromis niloticus* L.) collected from Lake Manzala, Egypt, during two seasons; winter and summer, 2017. physico-chemical variables of water samples were temperature, dissolved oxygen (DO), electric conductivity, pH, salinity, total dissolved solid (TDS), total suspended solid (TSS), ammonia, nitrate, and sulphate. Microbiological studies were applied for water samples and intestine, gills and flesh of fish. The Total viable bacteria, total coliform, faecal coliform, faecal streptococcus and *Pseudomonas* sp. were examined. The results suggest that the areas south to Port Said City and nearby Bahr El-Baqar drain were more polluted as a result of various drainage waters. Results of fish samples revealed that count means of intestine and gills organs were higher than count means of flesh organ. Molecular identification of suspected colonies using ISSR protocol revealed different strains of *Pseudomonas aeruginosa*. All isolates were tested for resistance to 10 groups of antibiotics. The results showed high frequency of multi-drug resistance to many antibiotics, particularly penicillin, ampicillin and chloramphenicol. Significance of Research in conclusion is that it indicates that the south eastern region of Lake Manzala showed worst water quality parameters and may pose health hazards to human and the whole ecosystem. So attention must be paid to this problem since it negatively affects the production of lake fish in addition to other negative consequences.

Cytotoxicity Effects of commercial para-dichlorobenzene on

Phaseolus vulgaris and *Vicia faba*

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Abstract:

The study aim is determining the minimal effective concentration of commercial p-DCB (analogous to it's a quantity in sewage) on large and small plant chromosomes in mitosis of the roots tip cells of *Vicia faba* and *Phaseolus vulgaris*. The application of the sewage sludges to agricultural lands can make a contribution to p-DCB pollution. Where found shoots of carrot, celery, spinach, and radishes these

plants grown in low and high concentrations of sewage sludge treatments contained p-dichlorobenzene. Therefore, the root tips were treated with commercial p-DCB (0.0, 2250, 4500, 9000, 18000 ppm) for 4 h, then fixed overnight in Carnoy's fixative, then stained with Orcein. The results showed that commercial p-DCB had influenced on the metaphase index rates, where risen steadily with increased p-DCB concentrations until reaching almost 56.65% at concentration 18000 ppm, whilst both the Ana-Telophase index rates have declined, where biggest drops were in Ana- Telophase index rates, they had a down to 2.27% nearly in both phases at the 4500 ppm concentration of p-DCB. Moreover, it has an effect in not recognizing all the phases of the mitotic division in the *P. vulgaris* cells except seeing the metaphase only. also affected on specific chromosomal aberration in all phases of the mitotic division in both the legume cells, such as the prophase, metaphase, anaphase, and telophase, while its effect was in the case of *P. vulgaris* in the metaphase stage. As for the abnormalities seen on chromosomes in both cases, they were numerous, including chromosomal bridges, lag chromosome after separation, as well as sticky chromosome, no polarity and chromosomal duplication. Conclusion: Commercial p-DCB similar for lab p-DCB (pure) in impact on cytological traits of plants and occurrences chromosomal aberrations according to this study.

Key words: para-dichlorobenzene, chromosomal aberration, Polyploid, diploids, mitotic index, cytogenetic.

Identification and antibiotics susceptibility of uncommon environmental isolates of species bacteria : *Ralstonia pickettii* and *Pseudomonas luteola* from Shatt Al-Hilla. in Babylon province\Iraq

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Abstract:

Ralstonia pickettii and *Pseudomonas luteola* are an opportunistic pathogens, Gram-negative bacteria have been found in moist soil which causes pollution of pure water which leads to many diseases by these pathogens. In the current study, *R. pickettii* and *P. luteola* were isolated from the Shat Al-Hilla in Babylon province. In this study were found *R. pickettii* more resistance to antibiotics than *P. luteola* and not sensitive to any antibiotics that used in the test while intermediate to four antibiotics from seventeen antibiotics. Whilst *P. luteola* sensitive to three antibiotics include Gentamicin, Ciprofloxacin, Trimethoprim/Sulfamethoxa and resistance to seven antibiotics.

Keywords : *Ralstonia pickettii* ; *Pseudomonas luteola*; opportunistic pathogen; pollution; Vitek; antibiotic susceptibility.

Comparative molecular analysis of *MecA*, *Sea* and *Seb* genes in Methicillin-resistant *Staphylococcus aureus* (MRSA)

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Abstract:

Methicillin resistant *Staphylococcus aureus* (MRSA), one of the most common pathogens associated with an increase of antimicrobial-resistance. Infections caused by *Staphylococcus aureus* may be demographically focused to specific parts of the world. This study will give critical bits of knowledge into the severity of the problem of antibiotic resistant organisms in Al-Basrah and give us valuable inputs regarding the possibility of a particular source being a contaminant that could lead to infection in this geographical area and study their profile of virulence genes including: (*MecA*, *Sea*, *Seb*). The study showed a high percentage of *Staphylococcus aureus* resistant to Methicillin, 39/46 (84.8%). that Nasal swab from H.C.Ws obtained the highest rate of MRSA 7/7 (100%) followed by wound swab 10/11 (90.9%) from patient most of them were already on antibiotic, Nasal swab from patient 5/6 (83%), swab taken from H.C.Ws hand and hospital wards 4/5 (80%) for each Methicillin Resistant *Staphylococcus aureus* obtained from Hospital theaters before sterilization and Skin swab from patient 3/4 (75%). *MecA* genes appeared in all MRSA isolates, *Sea* gene at 41% (16/39) and *Seb* genes, it was 10.3% (4/39).

Key words: Methicillin Resistant *Staphylococcus aureus* (MRSA) , *MecA* , *Sea* and *Seb* genes

The antimicrobial effect of *Equisetum arvense* and detection of active compounds.

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Abstract:

The detection of active compounds of the sterile stems of *Equisetum arvense* L. at by using the aquatic and methanolic extract. In methanolic extract we had obtained the following active compounds (saponins, alkaloids, tannins and flavonoids), but with aquatic extract the active compounds that identified are (saponins, terpenes, tannins, steroids and flavonoids). The aquatic and methanolic extracts from *Equisetum arvense* L were analyzed to find out the antibacterial activity against five different bacteria (*Staphylococcus*, *Pseudomonas aeruginosa*, *Salmonella*, *Proteus* and *E. coli*) with 100% extract concentration. The antibacterial activity (measured by zone of inhibition) for the extract. *Staphylococcus* showed maximum sensitivity (inhibition zone 30 mm) in methanolic extract and (inhibition zone 15 mm) in aquatic extract while *E. coli* showed minimum effect (inhibition zone 27 mm) in methanolic extract and (inhibition zone 14 mm) in aquatic extract among all the bacteria studied. These bacteria were found to be sensitive indicating the broad spectrum activity of the methanolic extract. *Salmonella* and *Proteus*, were insensitive to the aquatic extract. Now we need to analyze our results clearly but with the different range of concentrations (50, 25 and 12.5 %) g/ml of methanolic extract, in 50% g/ml the inhibition zone of bacteria respectively was (26 mm, 28 mm, 23 mm, 23 mm and 23 mm), in 25% g/ml concentration the results was (24 mm, 19 mm, 20 mm, 22 mm and 16 mm) while the results with the lower concentration of extract 12.5% g/ml was (20 mm, 16 mm, 17 mm, 15 mm and 14 mm). After that

the antibiotic test was performed, as the following antibiotics were used (erythromycin E, ciprofloxacin CP, ampicillin-sulbactam SAM, ceftiofur FOX, oxytetracycline T50) the results showed *Pseudomonas aeruginosa* was sensitive for all antibiotic while *Salmonella* was resistant against all antibiotic except TS and CP.

Keywords: *Equisetum arvense* L., antimicrobial activity, methanolic extract, antibiotic activity.

Biosynthesis of Nanoparticles using *Streptomyces* sp. : Mechanisms and Applications.

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Abstract:

Metal nanoparticles have been received vital attention from researchers and scientists across the world. Its involved in various applications, such as medical, environmental, agricultural and industrial applications. There are several methods for the synthesis of nanoparticles, the physical and chemical methods proven to be costly and toxic to the environment. Hence, there is an emerging need for new, non-toxic and inexpensive methods for nanoparticles' production. The biological method, using biological entities such as microorganisms (bacteria and fungi) proven to be the most reliable method for the synthesis of nanoparticles. The present review attempts to clarify the mechanism of the biological synthesis of metal nanoparticles by different species of *Streptomyces* bacteria. Additionally, the most important medical and environmental applications of metal nanoparticles produced by *Streptomyces* will be demonstrated.

Characterization of Fat Local Walnut Husk and Its Antimicrobial Activity.

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Abstract:

The present study aimed to know the fatty composition and antimicrobial activity of local walnut husk which were extracted by maceration with hexane solvent, the results of extract analysis by gas chromatography (GC) showed presence of unsaturated fatty acids with different proportions like stearic acid 0.0184%, lenolic acid 0.0856% and plasmatic acid 0.0347% . lenolic acid has the largest percent in it. The extract showed efficacy against a growth of bacteria *Staphylococcus aureus*(that causes food poisoning)with rate of growth inhibition diameter 15mm while no effect was seen on the other tested microbial isolates. The extract has more effective in *Penicillium* spp. than *Aspergillus oryzae* growth with inhibition percentage 19.11, 26.47 and 47.05 % for *Aspergillus oryzae* and 37.33, 57.3 and 61.33 % for *Penicillium* spp at concentration 1000, 2000 and 3000 ppm respectively.

Detection of Tn1545 conferring erythromycin resistance in clinical isolates of *Streptococcus pneumoniae*.

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Abstract:

This study was conducted to investigate the genetic organization of *erm*-carrying Tn1545 in clinical isolates of *Streptococcus pneumoniae*. A total of 15 isolates of *S. pneumoniae* isolates were examined and was found to contain Tn1545 element. Susceptibility of these isolates to different antibiotics was also examined, results showed that these isolates are resistant to penicillin in percentage of 93%, then to streptomycin and trimethoprim (87%), clindamycin (73%), kanamycin (67%), erythromycin, tetracycline and azithromycin (60%), ciprofloxacin and levofloxacin (53%).

Genomic DNA was extracted from *S. pneumoniae* isolates for detection Tn1545 by using specific primers to amplify *erm* gene carried by this transposable element. Results showed that seven of *S. pneumoniae* isolates were found to contain Tn1545 element giving them erythromycin resistance. *erm* gene encodes this antibiotic but does not mediate resistance to other antimicrobial agents. On the other hand, nucleotide sequence for *erm* gene was determined, and compared by alignment with the *erm* gene sequence located on the same transposable elements in standard strains of *S.pneumoniae* recorded in NCBI data base. Results of alignment showed 100% identity between these sequences.

Key words: *S. pneumoniae* , Tn1545, Erythromycin resistance