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## **URINARY TRACT INFECTIONS IN FEMALES: A REVIEW**

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### **ABSTRACT**

Urinary tract infections (UTIs) are common bacterial infections particularly in females. UTIs can be classified by anatomic site of involvement into lower and upper urinary tract infections. UTIs can also be divided into two major categories, uncomplicated and complicated. UTIs include a variety of clinical conditions such as urethritis, cystitis, pyelonephritis etc. The main symptoms of UTIs include urgency, increased frequency, pain on urination and a foul odor of urine. The microbial etiology of UTIs is reasonably consistent. *E.coli* remains the predominant uropathogen followed by *S.saprophyticus*, *Klebsiella pneumoniae*, Enterobacter, Proteus and Enterococcus species. Age of the patient, diabetes, catheterization, pregnancy, menopause, sexual intercourse, renal calculi, and tumors etc are the main predisposing factors for UTIs in women. For the diagnosis of UTI, the counting of number of bacteria and white blood cells in urine specimen has been accepted as a routine procedure. The bacterial count of  $>10^5$  CFU/ml of clean voided, midstream urine specimen is considered as significant bacteriuria while clinically significant pyuria has been defined as  $>10^6$  leucocytes per liter of urine. For the treatment of UTI, fluoroquinolones, sulfonamides, cephalosporins, nitrofurantoin and fosfomycin are the most common antibiotics.

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## **INTRODUCTION TO ANTIOXIDANT ENZYMES AND THEIR IMPLICATIONS IN PATHOPHYSIOLOGIC PROCESSES: A REVIEW ARTICLE**

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### **ABSTRACT**

Aerobic organisms possess antioxidant defense systems that deal with reactive oxygen species (ROS) produced as a consequence of aerobic respiration. Reactive oxygen is related to both, the arrest of growth and the start of cell differentiation. Low concentrations of reactive oxygen intermediates may be beneficial or even indispensable in processes such as intracellular messaging and defense against microorganisms, but higher amounts of active oxygen may be harmful to cells and organisms. A wide array of

non-enzymatic and enzymatic antioxidant defenses exists, including superoxide dismutase (SOD), glutathione peroxidase (GPX) and catalase (CAT). We describe their main characteristics and how these antioxidant enzymes work together against active oxygen. Small deviations from their physiological values may have a dramatic effect on the resistance of cells to oxidative damage to lipids, proteins and DNA. Consequently, toxic oxygen plays a role in aging process as well as in a number of human diseases that we list in this review.

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**NUTRITIONAL VALUES OF CITRUS FRUITS: DIFFERENTIATIONS TO ATTARCT MASS AND NICHE MARKETS WORLDWIDE**

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**ABSTRACT**

Worldwide one of the most demanded, studied and consumed fruit is 'citrus'. Concurrently its production has been increasing considerably for the last few years. Besides delicious taste, citrus fruits contain numerous vitamins, minerals and other useful elements. Citrus has always been considered a good source of Vitamin-C. In addition, the unique composition of vitamins, minerals, fibers and other compounds in citrus fruits help people avoiding some chronic diseases.

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**EXPLORING EXPORT POTENTIAL THROUGH SCIENTIFIC STORAGE OF CITRUS FRUITS AND USE OF GAMMA IRRADIATION TO OBTAIN SEEDLESS KINNO (*CITRUS RETICULATA* BLANCO)**

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**ABSTRACT**

Agriculture is the lynchpin of Pakistan's economy and any improvement in this sector will lead to socio-economic development of the country. Besides major crops, Kinno mandarin has high demand in the international market. With almost stagnant production of citrus fruits for the last five years, insufficient and unscientific storage facilities and large number of seeds are some of the hot issues in this industry. Scientific storage i.e. proper adjustment of temperature, relative humidity, time duration etc. may help reduce the huge post-harvest losses in citrus fruits. In addition, Pakistani exporters have been facing the problem of large number of seeds in kinno mandarin. The Nuclear Institute for

Agriculture and Biology (NIAB) claims that they have developed seedless kinno mutant through radiation. Overcoming these problems will open a new era in domestic and international marketing of citrus fruits in Pakistan.

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**A NEW TREMATODE, *MEHRAORCHIS CRIBBI* N.SP., FROM THE SMALL INTESTINE OF FROG**

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**ABSTRACT**

A new trematode species *Mehraorchis cribbi* is being described from the small intestine of frog from Karachi, Pakistan. The new species is characterised by possessing small ovoid body, oral sucker subterminal, prepharynx not-obvious, pharynx well developed; caeca reaching posterior end; testes symmetrical, cirrus pouch claviform; uterus occupying most of the hind body; vitellaria mostly in shoulder region; acetabulum elongated in mid region; genital atrium well developed almost circular glandular structure; and eggs small, numerous, measuring 0.026 – 0.032 by 0.011 – 0.012.

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**THREE NEW SPECIES OF THE GENUS *PTERONEMOBIUS* (ORTHOPTERA: GRYLLIDAE: NEMOBIINAE) FROM PAKISTAN WITH A KEY AND THEIR CLADISTIC RELATIONSHIP**

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**ABSTRACT**

Three new species to accommodate already described five species of the genus *Pteronemobius* described from various localities of Pakistan, with special reference to their male and female genitalia. A key to all taxa is formulated. All the taxa are compared to each other and cladistic relationship is also briefly discussed showing cladogram.

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**TWO NEW SPECIES OF THE GENUS *STENOCHIRUS* KARSCH (SCORPIONIDA: BUTHIDAE: BUTHIDAE) FROM PAKISTAN WITH THEIR RELATIONSHIP, CHROMATOGRAPHY AND ELECTROPHORESIS OF VENOM**

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#### **ABSTRACT**

Two new species of the genus *Stenochirus* Karsch are described from Sindh, Pakistan with special reference to their male genitalia, Gel chromatography and electrophoresis of the venom. These species are compared with their closest allies and the relationships are also briefly discussed using their apomorphic characters.

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**CONTROL AND GENITAL STUDY OF LEOPARD MOTH, ZEUZERA MULISTRIGATA MOORE (LEPIDOPTERA : COSSIDAE : ZEUZERINAE) FROM PAKISTAN**

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#### **ABSTRACT**

*Zeuzera mulistrigata* Moore, is recorded from Pakistan and described in detail with special reference to its head appendages, venation of fore and hind wings and male genitalia. The systematic position life cycle, diversity in Pakistan and its control are also briefly discussed.

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**TWO NEW AVIAN CESTODES OF THE GENUS JONESIUS YAMAGUTI, 1959 (CYCLOPHYLLIDEA: HYMENOLEPIDIDAE) IN KARACHI**

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#### **ABSTRACT**

Two new species of the genus *Jonesius* Yamaguti, 1959 have been described from avian hosts in Karachi. *Jonesius calumbae* n.sp., from the pigeon *Columba livia* (Gmelin) is characterized by having elongated scolex with muscular rostellum provided with ten hooks, suckers rounded to oval, anteriorly armed with minute spines. Genital opening is unilateral, genital atrium sucker-like, inside the osmoregulatory canals, testes two, symmetrical, rounded to transversely elongate cirrus sac reaching slightly beyond the median field, internal seminal vesicle large, elongate, broad at the base, external seminal vesicle absent. Ovary relatively large, transversely elongate, submedian, more towards poral side, larger than testes, slightly bilobed in some proglottids, vitelline gland compact, small, dorsal to ovary, therefore hardly visible, seminal receptacle present, poterodorsal to ovary. Gravid segments were not present. Other new species *J. karachiensis* n.sp. from the duck *Tadorna tadorna* (Linn.) is characterized by having a flattened scolex and long rostellum with ten hooks. Suckers are large occupying the whole scolex region at the sides of the rostellum. Genital opening is unilateral, marginal, near the anterior border of proglottid, testes two, almost rounded, cirrus sac reaching the median field, internal seminal vesicle small, round, external seminal vesicle absent. Ovary is rounded to slightly irregular, relatively small, median to slightly submedian, vitelline gland compact very small, hardly visible, dorsal to ovary, seminal receptacle present but not prominent. Uterus is intervascular, transverse sac containing eggs. This is the first report of the genus *Jonesius* Yamaguti, 1959 from Pakistan.

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**REDESCRIPTION OF A GONOCERINE SQUASH BUG OF UTMOST ECONOMIC IMPORTANCE AND CONFUSED TAXONOMIC STATUS *CLETUS PUNCTIGER* (DALLAS) FORM MUREE HILL (HEMIPTERA:HETEROPTERA) AND ITS CLADISTIC RELATIONSHIPS**

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**ABSTRACT**

*Gonocerus punctiger* Dallas which remained confused with *Homoeocerus minax* Walker, a serious pest of rice in East Asia as *Cletus punctiger* is redescribed here with reference to its ignored characters of metathoracic scent, auricles and male genitalia including inflated aedeagus and female genitalia including spermatheca. In this light its cladistic relationships are also briefly discussed.

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**THE POLLEN MORPHOLOGY OF THE GENERA *NESLIA*, *OCTOCERAS*, *BRAYA*, *DICERATELLA* (BRASSICACEAE) FROM PAKISTAN**

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## **ABSTRACT**

The pollen morphology of the 4 genera of Brassicaceae has been examined by light microscope. The shape of pollen grains are prolate spheroidal to prolate. On the basis of the shape, the pollen grains are divided in two groups.

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## **PALYNOLOGICAL STUDIES OF SOME GENERA FROM BRASSICACEAE**

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## **ABSTRACT**

Pollen morphology of 11 genera belonging to the family Brassicaceae was studied by light microscope. The pollen grains are 3-4 colpate. The shape of pollens are prolate, spheroidal to prolate or subprolate, exine of the pollen grains generally reticulate-granulate.

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## **RELATIONSHIP BETWEEN THICKNESS OF THE CELL WALL AND AMOUNT OF HOLOCELLULOSE AND ALPHACELLULOSE IN ELEVEN SPECIES OF CONIFERS GROWING IN PAKISTAN**

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## **ABSTRACT**

The total thickness of cell wall as well as its component layers was determined in eleven coniferous species viz, *Abies pindrow* Royle, *Cedrus deodara* (Rox. ex. Lamb), *Cupressus arizonica* Endl, *C. funebris* Endl, *C. sempervirens*, *L.C. torulosa* D.Don. *Picea Smithiana* (wall). Boiss. *Pinus halepensis* Miller, *P. roxburgii* Sargent, *P. wallichiana* A.B.Jackson and *Thuja orientalis* L. The thickness of the secondary wall varied between  $4.69 \pm 0.41 \mu\text{m}$  in *A. pindrow* to  $2.56 \pm 0.19 \mu\text{m}$  in *C. arizonica*.

The amounts of  $\alpha$  (alpha) cellulose and holocellulose in the cell walls were determined from extractive free wood. The correlation coefficients between thickness of cell wall and its component layers were correlated with holocellulose and alpha-cellulose contents of cell walls. It was found that compound middle lamella (CML) was weakly correlated

with holocellulose and alphacellulose.  $S_1$  (outer layer of the secondary wall) was positively correlated with holocellulose.  $S_2$  (middle layer of secondary wall) was negatively correlated with holocellulose while positively correlated with alphacellulose.  $S_3$  (inner layer of the secondary wall) was strongly correlated with alphacellulose.  $S_w$  (secondary wall) was uncorrelated with holocellulose but significantly correlated with alphacellulose.

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**BIOMASS PRODUCTION OF *TRICHODERMA HARZIANUM* (RIFAI) IN PALM OIL MILL EFFLUENTS (POME)**

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**ABSTRACT**

*Trichoderma harzianum* strain FA 1132 has shown potential as a biological control agent of *Ganoderma boninense*, the causal pathogen of basal stem rot (BSR) of oil palms based on previous nursery trials. This study investigates the suitability of the agrowaste slurry palm oil mill effluents (pome) as a feedstock for the possible mass production of strain FA 1132, with mycelial yield taken as the indicator of the biomass production. Results showed that the best growth of FA 1132 in pome was at 1:3 parts dilution to water, which gave a yield that was statistically comparable to its growth in the laboratory media Potato Dextrose Broth (PDB) and Richard's Solution. Production of the mycelial biomass increased by 141.25% when 1:3 pome was supplemented with sucrose. When supplemented with glucose, the best biomass yield was obtained from the 1:1 diluted pome, which gave a 217.99% yield increase. Thus, pome offers a potential as a feedstock for the biomass production of FA 1132, with the mycelial yield being significantly enhanced when the media was supplemented with sucrose or glucose as a carbon source.

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**PARTIAL PURIFICATION AND PROPERTIES OF AMYLOGLUCOSIDASE FROM *FUSARIUM SOLANI***

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**ABSTRACT**

*Fusarium solani*, a mesophilic fungus, was grown for 4 days at 35°C, pH 5 under solid state growth conditions using wheat bran for the production of amyloglucosidase. The specific activity of crude enzyme was 23.08 units mg<sup>-1</sup>. The enzyme was purified using fractional precipitation, anion-exchange and gel filtration chromatography. The recovery of amyloglucosidase after gel filtration was 35.65 % with 6.32 fold increase in specific activity. Maximum activity of the enzyme was observed at 40°C and pH 5.0. The  $K_m$  value for soluble starch was 0.4 mg ml<sup>-1</sup>. Amyloglucosidase from *F. solani* was thermally stable as it possessed a half-life of about 30 min at 56°C

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**STUDY OF GENETIC DIVERSITY AMONG DIFFERENT VARIETIES OF CANOLA (*BRASSICA NAPUS* L.) BY RANDOM AMPLIFIED POLYMORPHIC DNA (RAPD) MARKER**

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**ABSTRACT**

Canola oil is a popular oilseed crop due to its low erucic acid and glucosinolate. Being a newly introduced crop, less information is available about its agronomical requirement and genetic diversity. RAPD study was conducted to assess the genetic diversity among eight varieties of canola using ten RAPD primers. Forty five scorable bands were observed, out of which, 33 (73.33%) were polymorphic and only 12 (26.66%) were monomorphic. It was observed that CON-I, Dunckled, Shiralee and Abasin-95 were genetically closely related to each other. Maximum similarity was observed between CON-I and Dunckled (86%), however Hyola-42 and Oscar were genetically distinct from all other varieties.

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**EFFECT OF LEAD ON EXTERNAL MORPHOLOGY AND POLYTENE CHROMOSOMES OF *TABANUS BOVINUS***

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**ABSTRACT**

The influence of lead (lead acetate) on the cytogenetic and external morphology of *Tabanus bovinus* (Tabanidae) was investigated. The effect of lead acetate (9.65 mg/l)



and (0.009 mg/l) treatment on five and one generations respectively of *T. bovinus* was studied experimentally. From F2 till F5 reduction in hatching and malformation were found. Malformations concerned the teeth of mandible, sub-mentum, colour of pupa, adults, shape of genitalia and wings. In the F4 and F5 generation individuals with elongated legs and larvae with two gular sclerites were observed. Structure and functional abnormalities of the polytene chromosomes were found; pulverization of the chromosomes, pericentric heterozygous inversions. In the I chromosomes a synapsis of the homologues is almost complete, probably owing to differences at a molecular level which are not reflected in the banding pattern. The presence of different degrees of polytene and different amounts of centromere heterochromatin of the homologues of this chromosome could be result of an inhibitory effect of lead on the replication activity of both homologues.

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#### **ETHNOBOTANICAL STUDIES ON SOME MEDICINAL PLANTS OF DEHRI JULAGRAM MALAKAND AGENCY, PAKISTAN**

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#### **ABSTRACT**

Ethno botanical study revealed that 44 species of 31 families are being used by the local people of Dheri /Julagram Malakand Agency. These plants are invariably used as a crud drugs for treating various diseases. Local name and disease treated is recorded. Some of the species like *Mentha longifolia*, *Nasturtium officinale*, *Amaranthus viridis* and *Calotropis procera* etc., are available in abundance. The people collect these plants for their personal use only. Other species are threatened due to over collection, overgrazing and deforestation. The information collected shows that the people mostly use allopathic medicines. The ethnobotanical knowledge about the use of medicinal plants is rests most with the elders.

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#### **DISTRIBUTION OF MIGRATORY BIRDS ON COASTAL AREAS OF KARACHI (HAWKES BAY AND CLIFTON)**

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#### **ABSTRACT**

The present study deals with the observation of migratory birds on the coastal areas of Karachi (Hawkes Bay and Clifton) during the year 2001 – 2004. Different kinds of aquatic migratory birds (gull, terns, heron, egret, sandpiper) were observed during this period. These birds belong to 5 order, 11 families and 49 species. In the Hawkes Bay area the seasonal abundance of migratory birds were more than that of Clifton. It could be concluded that every year the migration of birds vary in numbers and different environments produce pronounced effects on bird populations.

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#### **THE VEGETATION OF ASTOLA ISLAND BALOCHISTAN, PAKISTAN**

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#### **ABSTRACT**

Astola Island locally known as Haft-Talar (means seven rocks) is a small-uninhabited island with an isolated rock a short distance to the south of Pasni in the Northern Arabian Sea. The island has its significance for maintaining the genetic and ecological diversity of the area. The natural vegetation is composed of xerophytic species that are able to survive the arid climate. The vegetational composition of the island was analyzed using Bruan-Blanquet abundance classes. Biological and leaf size spectra of the flora were also determined.

Forty-one plant species were recorded and collected from Astola Island. The biological spectrum revealed that chamaephytes were the dominant life-form while the leaf size spectrum showed the dominance of leptophyll species. Many of the plants from the island are known to have medicinal value.

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#### **AN APPLICATION OF CORRESPONDENCE ANALYSIS, DETRENDED CORRESPONDENCE ANALYSIS AND CANONICAL CORRESPONDENCE ANALYSIS WITH REFERENCE TO THE VEGETATION AND ENVIRONMENT OF CALCAREOUS HILLS AROUND KARACHI**

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## **ABSTRACT**

Thirty stands on the slopes of calcareous hills around Karachi and its vicinity were sampled by point-centered quarter method. Sampling was restricted to trees, shrubs and perennial herbs. Soil samples were collected from each stand and were analyzed physically and chemically. The vegetational and environmental (soil) data sets were subjected to various multivariate data exploratory techniques including principal component analysis (PCA), correspondence analysis (CA), detrended correspondence analysis (DCA), and canonical correspondence analysis (CCA). The results of the different techniques were compared. Each technique provided useful, often unique, information pertaining to the ecosystem. In general, information on compositional variation was helpful in the interpretation of the vegetational dynamics of the hills. Canonical correspondence analysis was able to expose the underlying environmental gradients associated with the vegetational variation. The merits and demerits of the techniques are discussed.

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## **DETECTION AND ANALYSIS OF HALOGENIC COMPOUNDS IN GROUND WATER**

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## **ABSTARCT**

For the determination of organic halogens in ground water, AOX, EOX and VOX parameters are used. This method can be used in the range of 1-100 µg Cl/L with a coefficient of variation of 5-10%. The methods are unbiased by interference from many common constituents in ground water, but high concentrations of iodide and sulphide may bias the AOX determination. Highly humic waters and waters heavily polluted with volatile, non-halogenated organics might exhibit reduced recoveries at EOX and VOX, respectively. Each method provided information on the nature of the organic halogens with respect to volatility and polarity of selected test compounds.

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## **OCCURRENCE AND DISTRIBUTION OF PESTICIDES IN UNDERGROUND WATER OF MALIR RIVER CATCHMENT AREA : A PRELIMINARY STUDY**

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## **ABSTRACT**

The concentrations and spatial distributions of various pesticides levels were investigated in underground water collected from ten stations from Malir River catchment area. The pesticides analysed were Aldrin, Cypermethrin, DDE, Dieldrin, DDT and Malathion. The concentrations of these pesticides are relatively significant at some stations. Their continuous accumulation in underground water of aquifers is a source of potential environmental threat which is responsible for serious health implications.

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### **IN VITRO ACTIVITY OF FLUOROQUINOLONES AMONG BACTERIAL ISOLATES OF CANCER PATIENTS**

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## **ABSTRACT**

Bacteraemic infections have become the major cause of mortality and morbidity in cancer patients. Fluoroquinolones have broad spectrum of antimicrobial activity and have increasingly been used for prophylaxis against infection in cancer patients. The activity of these fluoroquinolones was evaluated in cancer patients undergoing treatment against 60 g +ve and -ve bacterial strains isolated from blood cultures. The susceptibility was determined by broth dilution method according to National Committee Clinical Laboratory Standards (NCCLS), USA guidelines. The overall respective MICs at which 50% and 90% of isolates were inhibited (MIC50s and MIC90s) were as follows ciprofloxacin, 4 and 8ug/mL; ofloxacin, 16 and 64ug/mL; pefloxacin, 16 and 128ug/mL. The percent resistance of gram negative bacterial isolates against ciprofloxacin, ofloxacin and norfloxacin was 80%, 95% and 100% respectively. In gram positive bacteria high resistance was observed against ciprofloxacin where only 15% strains were susceptible in methicillin susceptible *Styphlococcus aureus* and 12% in methicillin resistant *Staphylococcus aureus*. Where as 100% resistance were observed in case of pefloxacin, ofloxacin and norfloxacin against both methicillin resistant and methicillin sensitive *Staphylococcus aureus*. High resistance observed in this study against clinical isolates of cancer patients against potent antimicrobial agent warrants the need of monitoring susceptibility of bacterial isolates from cancer patients for better management and treatment of patients.

*Int. J. Biol. Biotech.*, 2(3): 651-654, 2005.

### **CROSS INOCULATION STUDIES I: RESPONSE OF COWPEA (*VIGNA UNGUICULATA*) TO INOCULATION WITH RHIZOBIA FROM TREE LEGUMES**

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### **ABSTRACT**

Rhizobia from root nodules of *Albizia lebbbeck*, *Dalbergia sissoo*, *Leucaena leucocephala*, *Pithecellobium dulce*, *Prosopis glandulosa*, *P. juliflora*, and *Vigna unguiculata* were tested for their ability to produce root nodules on *V. unguiculata*. Isolates from all the leguminous plants produced nodules on *V. unguiculata*. Isolates from *D. sissoo*, *L. leucocephala*, *P. dulce* and *P. glandulosa* were most effective in nitrogen fixation and produced substantial increase in dry weight and nitrogen contents of the host plant.

*Int. J. Biol. Biotech.*, 2(3): 655-657, 2005.

### **CELL CULTURE-DERIVED ANAPLASMA MARGINALE VACCINE : SEQUENTIAL CHALLENGE EXPOSURE OF PROTECTIVE IMMUNITY DURING A 3-MONTH POST VACCINATION PERIOD**

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### **ABSTRACT**

Cell culture-derived soluble *Anaplasma marginale* vaccine admixed with a saponin adjuvant was administered in single dose, 2 weeks between doses, to 6 months rats. An additional 10 rats served as non-vaccinated controls. Comparable groups of these rats were challenge exposed at 90 and 100 days after vaccination, using  $1 \times 10^5$  *A. marginale* organisms contained in freshly collected blood from a splenectomized rats with ascending parasitemia. Challenge exposure led to no deaths of vaccinated rats, whereas 5 of the control (non-vaccinated) rats died by *A. mrginale*. All clinical and hematologic variables examined indicated that the vaccinated rats had gained immunologic protection in comparison with the control group. An immune recognition as manifested by an anamnestic humoral response to challenge exposure was in evidence in the vaccinated rats.

*Int. J. Biol. Biotech.*, 2(3): 657-666, 2005.

### **IMPACTS OF WATER QUALITY ON GROWTH, CONDITION FACTOR AND HAEMATOLOGICAL PARAMETERS OF OREOCHROMIS MOSSAMBICUS**

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## **ABSTRACT**

The present study indicates the quality of water impacts both on the growth as well as on the haematological parameters of *Oreochromis mossambicus* as the maximum number of RBC, WBC and Hb concentration were recorded in the fishes which are captured from spot 3, comparatively has less dissolved oxygen, minimum numbers of RBC, WBC and Hb in spot 1. Those water bodies, which have higher oxygen contents, show better growth of fishes.

*Int. J. Biol. Biotech.*, 2(3): 667-672, 2005.

### **EFFECT OF FORMULATED DIET ON FISH PRODUCTION IN POLY-CULTURE SYSTEM**

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## **ABSTRACT**

A feed trial was conducted to determine growth of three Indian major carps i.e. *Catla catla* (0.31g), *Labeo rohita* (0.22g) and *Cyprinus carpio* (0.4 g) under intensive culture system. They were fed with a formulated diet with the composition of Casein, Gelatin, Dextrin, Cod liver oil, Cellulose, Carboxymethyl cellulose, Miner pre mix, Vitamin mix and Oxytetracycline. The whole mixture contain 45.8% crude protein on a dry weight basis and served for 75 days twice a day at 3% of body weight. It was noticed that all fries did not exhibit same results. Among experimental specimen *Catla catla* respond significantly by exhibiting least FCR value  $3.735 \pm 2.293$  followed by SGR  $2.405 \pm 1.642$  and % weight gain  $34.3 \pm 13.9$ .

*Int. J. Biol. Biotech.*, 2(3): 673-677, 2005.

### **EFFECT OF CYCLES OF FEED DEPRIVATION ON COMPENSATORY GROWTH OF NILE TILAPIA (*OREOCHROMIS NILOTICUS*)**

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## **ABSTRACT**

Nile tilapias (*Oreochromis niloticus*) weighing  $2.669 \pm 1.713$  g (mean $\pm$ SD) were kept in glass aquarium for 8 weeks. The experiment was divided into two cycles i.e. non feeding period (NFP) and feeding period (FP). The fish were deprived of feed in 1<sup>st</sup>, 2<sup>nd</sup> and 4<sup>th</sup>

week while feed was given in 3<sup>rd</sup>, 5<sup>th</sup>, 6<sup>th</sup>, 7<sup>th</sup> and 8<sup>th</sup> week. At the end of week 1 and 2, the fish had significantly lowered body weight (-15.7%). Week 3<sup>rd</sup> was subjected to feeding and fish were further decrease the body weight (-18.3%). Compensation in weight was begun in 4<sup>th</sup> week although the fish were deprived of feed. During four consecutive feeding weeks they exhibited gradual compensation followed by highly significant increase in weight (week 7<sup>th</sup>, 52.7% & week 8<sup>th</sup> 66.9%). The specific growth rate (SGR) of experimental fish in feeding cycles were significantly higher than non feeding cycle, suggesting that hyperphagia was the mechanism responsible for increased growth rate during cycle of deprivation. The amount of moisture, protein, lipid and ash did not differ significantly throughout the experiment.

*Int. J. Biol. Biotech.*, 2(3): 679-685, 2005.

### **CORRELATION BETWEEN VAM SPORE DENSITY IN SOIL AND VAM INFECTION IN ROOTS OF WHEAT**

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<sup>2</sup>*Department of Botany, University of Karachi, Karachi 75270, Pakistan.*

#### **ABSTRACT**

Results of three successive years' studies under experimental plot condition showed a significant correlation between VAM infection in roots of six wheat varieties viz., Blue silver, Maxi-Pak, Pak-70, Pavon, Sindh-83, and ZA-77 and density of VAM spores in their rhizospheric regions. VAM infections in roots of all the six varieties initially established then progressed in sigmoid fashion till harvesting stage. While the density of VAM spores reduced significantly ( $P < 0.01$ ) in rhizospheric regions on sowing seeds of wheat varieties then increased exponentially and reached the highest at harvesting stage. The regression line showed the dependency of Y-variable on X-variable with 38 to 68 % variation.

*Int. J. Biol. Biotech.*, 2(3): 682-694, 2005.

### **TRIPARTITE INTERACTIONS BETWEEN ROOT LESION NEMATODE, VAM FUNGUS AND WHEAT VARIETIES**

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#### **ABSTRACT**

Studies on tripartite interactions between vesicular arbuscular mycorrhiza–VAM, root lesion nematode and wheat varieties were carried out in soil pots to find out the potentiality of VAM fungus (*Glomus mosseae*) in limiting the activities of root lesion

nematode (*Pratylenchus* sp.) in rhizospheres of 6 wheat varieties, while resistance / susceptibility of the wheat varieties towards the nematode / VAM fungus was also observed. On single (separate) inoculations (*G. mosseae* / *Pratylenchus* sp.) Blue silver showed positive response towards VAM fungus ( $85.58 \pm 4.7$  % infection) but least to nematode in term of diseases severity–DS ( $16.75 \pm 6.8$  %). However, the var. Mexi Pak showed susceptibility towards nematode ( $48.08 \pm 08$  % DS) and comparatively less response towards VAM fungus ( $55.18 \pm 7.7$  % infection). The combined inoculations (*G. mosseae* + *Pratylenchus* sp.) showed significant reduction ( $P < 0.05$ ) in root DS and the population of *Pratylenchus* sp. in rhizospheric regions of all wheat varieties except Mexi Pak as compared to control set of pots. Blue Silver showed maximum reduction in the population of *Pratylenchus* sp. ( $62.5 \pm 04.71$  %) while it was least in Mexi Pak ( $06.8 \pm 05.56$  %).

*Int. J. Biol. Biotech.*, 2(3): 695-700, 2005.

#### **CHARACTERIZATION OF *PHYTOPHTHORA INFESTANS* ON THE BASIS OF PHENOTYPIC MARKER (MATING TYPE)**

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#### **ABSTRACT**

*Phytophthora infestans* is one of the most destructive pathogens of potato and causal agent of notorious disease late blight in Pakistan. Late blight infected potato samples were collected from the different potato growing areas of Pakistan, where late blight is a problem and from diseased samples 168 isolates were isolated. *Phytophthora infestans* sexually reproduce by mating type A1 and A2 were investigated by standard A2 strain (US8). In mating type test, when *P. infestans* isolates mated with known A2 standard isolate, produced oospore and showed A1 mating type but when no oospore production then indicated A2 mating type. During this study population of A2 mating type was higher (70%) in the population of Punjab (zone 2) but in Swat valley (Zone 5 and 6b), the percentage of A2 mating type was lower (44.5% and 10%). The changes in the percentage of mating types (A1 and A2) showed the variable nature of *P. infestans*. Present study proved that the pattern of mating type distribution has been changed as compared to previous studies.

*Int. J. Biol. Biotech.*, 2(3): 701-704, 2005.

#### **VARIETAL SCREENING OF POTATO AGAINST *RHIZOCTONIA SOLANI***

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<sup>3</sup> Pakistan Science Foundation, Islamabad, Pakistan.

<sup>4</sup> Graduate Student, Department of Statistics, University of Arid Agriculture, Rawalpindi, Pakistan.

## **ABSTRACT**

Management of black scurf disease through determining levels of susceptibility in 12 germplasm lines and varieties of potato was investigated by using *Rhizoctonia solani* AG 3 isolate SL-41, previously characterized according to anastomosis group and pathogenicity against eight disease producing symptoms (parameters) of black scurf disease viz., eyes germination, number of sprouts, sprouts killed, stem girdling, stem canker, stolon canker, black scurf incidence and severity. Overall, statistically non-significant differences between inoculated and non-inoculated treatments were found in varieties SH-5, SH-20 and germplasm line CIP-9605 except black scurf incidence (37.33%) in var. SH-20, black scurf severity of 1.86 in var. SH-5 on rating scale of 0-5 and number of sprouts in line CIP-9605, where significant differences were found between inoculated and non inoculated treatments. Varieties SH-5, SH-20 and line CIP-9605 were found resistant to the disease causing fungus when compared with the remaining lines and varieties. Faisalabad white was found to be the most susceptible variety as statistically, significant differences for eyes germination, number of sprouts, sprouts killed, black scurf incidence and severity were found. As it is susceptible to black scurf disease pathogen, therefore, it could not be grown as a resistant variety against *R. solani* particularly in agro-ecological zone 2 comprising of Sahiwal, Pakpattan, Okara, Sialkot, Narowal, Jhang and Faisalabad districts, where the disease is already a problem.

*Int. J. Biol. Biotech.*, 2(3): 705-706, 2005.

## **EFFECT OF NEEM SEED COAT OIL FRACTIONS ON STORED GRAIN FUNGI**

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## **ABSTRACT**

Neem seed coat oil fractions were evaluated for their efficacy against three grain storage fungi i.e. *Aspergillus flavus*, *A. fumigatus* and *A. wentii* and one soil fungus *Alternaria tenuis*. The neem oils significantly inhibited the growth of *A. flavus* than other three fungi.

*Int. J. Biol. Biotech.*, 2(3): 707-710, 2005.

## **INDOOR FUNGAL ALLERGENS**

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## **ABSTRACT**

In all 56 species of fungi belonging to 19 genera were isolated and identified from the indoor environment of Karachi City. Hospital records show that there is an increase in dermal and respiratory diseases among the residents of Karachi City. Some of the isolated fungi from Karachi have been reported to cause allergic diseases in countries where atmospheric fungi present indoors have been studied in detail in relation to such diseases. It is advisable to safely dispose off discarded food and other organic matters immediately so as to prevent the growth and multiplication of microbial propagules. For further reduction of air pollutants the use of leaded petrol in transport system should be replaced by environment friendly CNG gas and chemical factories situated inside the city should be shifted far away to do away with the particulate matter impregnated with toxic chemicals and thereby reduce the incidence of allergic diseases.

*Int. J. Biol. Biotech.*, 2(3): 711-713, 2005.

### **SEEDBORNE MYCOFLORA OF SOYBEAN**

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## **ABSTRACT**

A total number of 20 species of fungi belonging to 12 genera were isolated from soybean seed collected from different localities of Pakistan by using blotter, agar plate and deep freezing methods as recommended by ISTA (International Seed Testing Association). Where 12 fungal species are new reports from Pakistan. Of these methods blotter method yielded highest number of fungi as compared to agar plate and deep freezing methods.

*Int. J. Biol. Biotech.*, 2(3): 715-721, 2005.

### **TERATOGENIC EFFECT OF ORALLY ADMINISTERED TECHNICAL DIMETHOATE IN RATS**

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## **ABSTRACT**

Dimethoate (O, O- dimethyl-S- (N- methylcarbamoyl- methyl) phosphorodithioate), an organophosphate insecticide, was examined for its potential to produce developmental toxicity in rats after oral administration. Pregnant Fischer 344 rats were given sublethal doses of 0 (corn oil), 7, 15, and 30 mg/kg/day dimethoate by gavage on Gestation Days 6 through 15. Maternal effects in the 30 mg/kg/day dose group included cholinergic signs, decreased body weight, and decreased feed consumption. No maternal effects were apparent in the 7 and 15 mg/kg/d dose groups. Maternal exposure to dimethoate during organogenesis significantly affected the number of live fetuses, early resorption, mean fetal weight, and the incidence of skeletal malformations in the 30 mg/kg/d dose group. On the basis of the present results dimethoate showed maternal and developmental toxicity at 30 mg/kg/day.

*Int. J. Biol. Biotech.*, 2(3): 723-728, 2005.

### **ANTIOXIDANT ACTIVITY OF ROSEMARY EXTRACT IN 2% HYDROQUINONE CREAM**

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## **ABSTRACT**

Powdered dry leaves of rosemary were extracted with methanol. Rosemary extract was tested for antioxidative activity in comparison with antioxidants (sodium metabisulfite and butylated hydroxyl toluene) at 0.1, 0.5, 1.0 and 2.0% w/w in 2% w/w hydroquinone cream. The systems were incubated in a dark room at  $25^{\circ} \pm 0.5^{\circ}\text{C}$  and  $45^{\circ} \pm 0.5^{\circ}\text{C}$  for three months. The physical stability and the percentages of hydroquinone remaining after two weeks and one, two, and three months were determined by UV spectrophotometry at 294 nm according to official standard procedures. The experiment revealed that oxidation degradation of hydroquinone was accelerated by heat even with existence of antioxidants. The rosemary extract at 1.0 and 2.0% can be used as a double action (both water- and oil-soluble) antioxidant, having 74 and 77% (at  $25^{\circ}\text{C}$ ), and 53 and 58% (at  $45^{\circ}\text{C}$ ) hydroquinone remaining, respectively, after three months. These results suggested the possibility of using the rosemary extract as an effective natural antioxidant for substances that are oxidation-susceptible.

*Int. J. Biol. Biotech.*, 2(3): 729-736, 2005.

### **EXOPOLYSACCHARIDE OVERPRODUCING VARIANT OF *PSEUDOMONAS FLUORESCENS* STRAIN CHA0 ENHANCES TOLERANCE TO VARIOUS ENVIRONMENTAL STRESSES *IN VITRO* BUT DOES NOT IMPROVE *MELOIDOGYNE JAVANICA* BIOCONTROL IN TOMATO**

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## **ABSTRACT**

A variety of stress situations may affect the activity and survival of plant-beneficial pseudomonads added to soil to control root diseases. *Pseudomonas fluorescens* strain CHA0 produced extracellular proteases and caused substantial mortality of the juveniles of *Meloidogyne javanica*, the root-knot nematodes, *in vitro* while strain CHA211, a highly mucoid (exopolysaccharide overproducing) derivative of the strain CHA0, did not. In general, the both the bacterial inoculants exhibited osmosensitivity of a similar degree upon exposure to NaCl or sorbitol, strain CHA211 survived better than CHA0 when growing cultures of the bacteria were exposed to sorbitol at 1.2 M concentration. Whereas both the bacterial strains were equally susceptible to paraquat and NaOCl, strain CHA211 was more tolerant to H<sub>2</sub>O<sub>2</sub> than CHA0. Likewise, mutant withstood thermal stress (42 and 50°C) better than its wild type counter part CHA0. Application of strains CHA0 or CHA211 to sandy loam soil resulted in a significant reduction of nematode population densities in roots but only strain CHA0 reduced root-knot infection due to *M. javanica*. The bacterial strains did not differ markedly in their colonization in tomato rhizosphere. Strain CHA0 caused systemic reduction of nematode penetration greater than CHA211.

*Int. J. Biol. Biotech.*, 2(3): 737-739, 2005.

## **BIOLOGICAL EFFECT OF BIO-FERTILIZER – HUMIC ACID ON MUNG BEANS (*VIGNA RADIATA* L.) WILCZEK**

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## **ABSTRACT**

Field experiments on mung beans (*Vigna Radiata* L.) Wilczek were conducted using lignitic derived humic acids. The study includes soaking of seeds with 0.005% aqueous humate and followed by spray of humate solution with variable concentrations (0.001 – 0.0075 g/l/m<sup>2</sup>). Effect of supplementation with Sarsabz (a micronutrient formulation) was also studied. Significant effects were observed on plant height, root weight, No. of pods, pod length, pod grain weight, dry weight of plant, waste material, seed protein value and yield of grain. The experimental results showed that humic acids greatly enhance the yield of mung beans, at concentration 0.05%, which is almost doubled as compared to controls.

*Int. J. Biol. Biotech.*, 2(3): 741-744, 2005.

**REDUCTION IN CHROMIUM CONTENT OF TANNERY EFFLUENTS BY USING SOME SELECTED HYDROPHYTES**

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**ABSTRACT**

Treatment of tannery effluents with hydrophytes viz., *Chara intermedia*, *Typha angustifolia*, *Hemarthria compressa*, *Pistia stratiotes*, *Marsilea minuta* and *Salvinia natans* showed a reduction in the heavy metal component of the effluents after growing them in tannery effluents. *Typha angustifolia* was found to be the best followed by *H. compressa*. These plants not only tolerated the full concentrations of tannery effluents but also reduced chromium content of the effluents upto a considerable extent. Other species exhibited more sensitivity towards high concentrations of the effluents and could not survive long during the experiment.

*Int. J. Biol. Biotech.*, 2(3): 745-749, 2005.

**EFFECT OF VARYING INTENSITIES OF SHADE ON WHEAT CROP**

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**ABSTRACT**

The experiment was conducted to study the effect of varying degrees of shade on wheat crop. The results of the study indicated that plant height and number of tillers increased under full light conditions after 120 days of sowing as compared to 25 and 50% light treatments while it was not much different from 75% light treatment. The yield of grain and total dry weight of the harvest was significantly high under full light intensity than all other treatments. Similarly, NPK content of wheat grains were also higher under full light condition. It is recommended that contemplation should be given to reduce the shade effect on field crops for getting good yield.

*Int. J. Biol. Biotech.*, 2(3): 751-759, 2005.

**EFFECT OF IRRIGATION ON AGRONOMIC TRAITS OF WHEAT (*TRITICUM AESTIVUM* L.)**

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## **ABSTRACT**

The effect of nine different levels of irrigation on yield and yield components of wheat indicated that Uqab-2000 gave 7.0% to 8.8% higher total dry matter yield than Chenab-2000 in 2001-2002 and in 2002-2003, respectively. Crop was irrigated partially or fully i.e. throughout the season including grain growth period increased grain yield by 136.1% due to an increase in the number of ears m<sup>-2</sup>, number of spikelets per ear over unirrigated plants. Irrigation increased the number of grains spike<sup>-1</sup> over unirrigated treatment by 46-66 % in different seasons. Cultivar differences in mean grain weight were non-significant in both the years. Moisture stress during grain growth period drastically reduced the mean grain weight. The fully irrigated treatments increased mean grain weight by 104.5% in 2001-2002 and 22.0% in 2002-2003 over unirrigated control treatment. Mean harvest index varied from 29.63 % to 31.0%. There was a positive and linear relationship between total dry matter and grain yield.

*Int. J. Biol. Biotech.*, 2(3): 761-764, 2005.

## **TOTAL NITROGEN CONCENTRATION IN NODULATED AND NON NODULATED TREE LEGUMES GROWING IN SINDH**

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## **ABSTRACT**

A survey of nodulation was made among 28 species of tree legumes comprising 9, members of Caesalpinaceae, 12 of Mimosaceae and 7 of Papilionaceae. The percentage of nodulation found in Caesalpinaceae, Mimosaceae and Papilionaceae were 11.1 %, 100 % and 100 % respectively. Caesalpinoid genera viz, *Bauhinia*, *Delonix*, *Parkinsonia* and *Tamarindus* were found non-nodulating. All the twenty eight species including eight non-nodulated and twenty nodulated were analysed for their nitrogen contents. The role of nodulated and non nodulated trees in improving soil fertility of derelict and denuded lands of Sindh has been discussed.

*Int. J. Biol. Biotech.*, 2(3): 765-771, 2005.

## **EFFECT OF EXOGENOUS APPLICATION OF GLYCINEBETAIN ON CAPITULUM SIZE AND ACHENE NUMBER OF SUNFLOWER UNDER WATER STRESS**

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## **ABSTRACT**

Plants grown under stressful environments, accumulate many organic compounds thorough biochemical changes, which improve their growth and development. Among these, quaternary ammonium compounds, especially the glycinebetaine (GB) is very useful in conferring resistance against abiotic stresses. Exogenous application of GB is a novel approach used to minimize the adverse effects of environmental stresses on crop plants. The present study was carried out to assess whether exogenously supplied GB has any role in drought tolerance of sunflower. Two sunflower lines, Gulshan-98 and Suncross were subjected to water stress at the vegetative and reproductive stages of plant growth. Three levels of GB (0, 50 and 100 mM) were applied before sowing (seed treatment) and at the time of initiation of water stress at the vegetative or reproductive stages. Water deficit had a marked adverse effect on capitulum diameter and number of achenes per capitulum of both sunflower lines. The sunflower line, Suncross, performed better than Gulshan-98 for both above mentioned characteristics. Exogenous application of GB either in the form of seed treatment or foliar spray was, not effective in alleviating the adverse effect of water deficit on capitulum diameter. Water stress induced reduction in number of achenes per capitulum, however, significantly improved by the foliar application of GB. Pre-soaking of seeds with GB was not effective in preventing the adverse effects of water stress on yield components. Moreover, the effects of water stress and exogenous GB was more pronounced when applied at the vegetative stage than that at the reproductive stage. Foliar spray of 100 mM GB was found to be more beneficial in preventing the negative effects of water deficit on achene yield per plant as compared with 50 mM GB.

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**EFFECTS OF CHROMIUM AND LEAD ON GERMINATION, ACCUMULATION AND PHENOLIC CONTENTS OF *GOSSYPIUM HIRSUTUM* (L.) AND *SOLANUM MELONGENA* (L.)**

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## **ABSTRACT**

Effects of chromium and lead chloride on germination, accumulation and stress phenolics were studied. Lead chloride significantly reduced the germination, increased accumulation and total phenols in two tested species (*Gossypium hirsutum* and *S.*

*melongena*). Maximum inhibition was recorded in plants when treated with 150ppm lead as compared to chromium treated sample and control.