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**REDESCRIPTION OF AN UNIQUE AND LITTLE KNOWN SQUASH BUG *HOMOEOCERUS SUBJECTUS* WALKER (HETEROPTERA: COREIDAE) WITH REFERENCE TO METATHORACIC SCENT AURICLES, MALE AND FEMALE GENITALIA AND ITS ZOOGEOGRAPHY AND CLADISTIC RELATIONSHIPS**

**R. Perveen and I. Ahmad**

*Department of Zoology, University of Karachi, Karachi-75270, Pakistan*

#### **ABSTRACT**

*Homoeocerus subjectus* Walker an unique and little known squash bug species from Indian Assam, China and Thailand is redescribed in detail with reference to metathoracic scent auricles and male and female genitalia. In this light and considering its zoogeographical distribution its cladistic relationships are also briefly discussed.

*Int. J. Biol. Biotech.*, 2(2): 255-258, 2005.

**ADDITIONAL INFORMATIONS AND CONFIRMATION OF NEW SPECIFIC STATUS OF STINK BUG *CAYSTRUS QUADRIMACULATUS* LINNAVUORI (PENTATOMIDAE: PENTATOMINAE: CAYSTRINI) EARLIER DESCRIBED AS *C. MARGINIVENTRIS QUADRIMACULATUS* LINNAVUORI WITH CLADISTIC RELATIONSHIPS**

**M. Zahid<sup>1</sup> and I. Ahmad<sup>2</sup>**

<sup>1</sup>*Department of Zoology, Federal Urdu University of Arts, Sciences & Technology, Gushan-e-Iqbal, Karachi, Pakistan*

<sup>2</sup>*Department of Zoology, University of Karachi, Karachi-75270, Pakistan*

#### **ABSTRACT**

*Caystrus marginiventris quadrimaculatus* Linnavuori is redescribed with additional informations on its newly raised specific status by its original author with reference to its male genitalia. In this light its cladistic relationships with in its genus *Caystrus* Stål is also briefly discussed.

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**REVISION OF THE GENUS *CALOSOMA* WEBER (COLEOPTERA: CARABIDAE) WITH TWO NEW SPECIES FROM PAKISTAN WITH THEIR CALDISTIC RELATIONSHIPS**

**S. N. A. Hashmi<sup>1</sup>, S. Kamaluddin<sup>2</sup> and S. Z. Hussain<sup>3</sup>**

<sup>1</sup>*Department of Zoology, Government College for Men, Nazimabad, Karachi.*

<sup>2</sup>*Department of Zoology, Federal Urdu University of Arts, Science and Technology, Gulshan-e-Iqbal Campus, University Road, Karachi.*

<sup>3</sup>*Department of Zoology, Government Degree College, Lines area for women.*

## **ABSTRACT**

Eleven species of the genus *Calosoma* Weber including two new species from Pakistan and Azad Kashmir are briefly described with reference to their taxonomic characters, male and female genitalia. A key to all the eleven species recorded from above areas is formulated and on the basis of their apomorphies the cladistic relationship is also briefly discussed.

*Int. J. Biol. Biotech.*, 2(2): 273-276, 2005.

**FIRST TIME RECORDED BORDERED SALLOW MOTH *PYRRHIA UMBRA* HUFN (LEPIDOPTERA : NOCTUIDAE : HELIOTHINAE) FROM SINDH, PAKISTAN, WITH ITS DIVERSITY, LIFE CYCLE AND CONTROL**

**S. N. Viqar<sup>1</sup>, S. Kamaluddin<sup>2</sup> and K. A. S. Khan<sup>2</sup>**

<sup>1</sup>*Department of Zoology, Government Degree College for Women, Block-M, North Nazimabad, Karachi, Pakistan*

<sup>2</sup>*Federal Urdu University of Arts, Science and Technology, Gulshan-e-Iqbal Campus, Karachi, Pakistan*

## **ABSTRACT**

*Pyrrhia umbra* Hufn., is recorded for the first time from Sindh. Described in detail with special reference to its head appendages, venation of fore and hind wings and female genitalia. The systematic position and its diversity in Pakistan is also briefly discussed.

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**GENITAL STUDIES OF SOUTH AFRICAN WHITE MONKEY MOTH *PHIALA INCANA* WALLENGREN (LEPIDOPTERA:EUPTEROTIDAE: EUPTEROTINAE) RECORDED FROM GALYAT**

**S. N. Viqar<sup>1</sup> and A. S. Siddiqui<sup>2</sup>**

<sup>1</sup>*Department of Zoology, Government Degree College for Women, Block-M, North Nazimabad, Karachi, Pakistan*

<sup>2</sup>*Federal Urdu University of Arts, Sciences and Technology, Gulshan-e-Iqbal Campus, Karachi, Pakistan*

## **ABSTRACT**

*Phiala incana* Wallengren., is recorded first time from Galyat, Pakistan. Described in detail with special reference to its head appendages, venation of fore and hind wings and

female genitalia. The systematic position and its diversity in Pakistan is also briefly discussed.

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**REDESCRIPTION OF *MYLLOCERUS UNDECIMPULATUS* FAUST (COLEOPTERA: CURCULIONIDAE) WITH REFERENCE TO MALE AND FEMALE GENITALIA FROM PAKISTAN**

**S. A. Rizvi<sup>1</sup>, Z. Ahmed<sup>2</sup> and M. A. Akhter<sup>1</sup>**

<sup>1</sup>*Department of Zoology, University of Karachi, Karachi-75270, Pakistan*

<sup>2</sup>*Department of Zoology, Federal Urdu University of Arts, Sciences and Technology, Karachi, Pakistan*

**ABSTRACT**

*Mylocerus undecimpulatus* Faust is redescribed with reference to its male and female genitalia from Sindh, Pakistan. The present taxon is compared with its closest allies.

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**REDESCRIPTION OF *MYLLOCERUS DISCOLOR* BOHEMAN (COLEOPTERA: CURCULIONIDAE) WITH REFERENCE TO MALE GENITALIA FROM PAKISTAN**

**Z. Ahmed<sup>1</sup>, S. A. Rizvi<sup>2</sup> and M. A. Akhter<sup>1</sup>**

<sup>1</sup>*Department of Zoology, Federal Urdu University of Arts, Sciences and Technology, Gulshen-e-Iqbal, Karachi, Pakistan.*

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

**ABSTRACT**

*Mylocerus discolor* Boheman is redescribed with reference to its male genitalia from Sindh, Pakistan. The present taxon is compared with its closest allies.

***Int. J. Biol. Biotech.*, 2(2): 289-293, 2005.**

**PALYNOLOGICAL STUDY OF SOME GENERA OF BRASSICACEAE (*SAMERARIA*, *SAVIGNYA*, *TAUSCHERIA*, *TETRACME*, *TORULARIA*, *TURRITIS*) FROM PAKISTAN**

**Rehana Khan**

*Department of Botany, Federal Urdu University of Arts, Sciences and Technology, Karachi, Pakistan.*

### **ABSTRACT**

Pollen morphology of 10 species belonging 5 genera of the family Brassicaceae from Pakistan has been examined by light microscope. Pollen grains are usually radially symmetrical, sub-prolate to prolate or oblate-spheroidal, tricolpate rarely 4-6 colpate. Sexine thinner and thicker than nexine. Tectum reticulate with more or less than nexine. Tectum reticulate with more or less regular pattern.

*Int. J. Biol. Biotech., 2(2): 295-297, 2005.*

### **POLLEN MORPHOLOGY OF FEW GENERA OF BRASSICACEAE (CHEIRANTHUS, ERUCA, CORONOPUS, IBERIS) FROM PAKISTAN**

**R. Khan and Erum**

*Department of Botany, Federal Urdu University of Arts, Sciences and Technology, Karachi, Pakistan.*

### **ABSTRACT**

Pollen morphology of 4 species belonging to 4 genera of the family Brassicaceae from Pakistan has been examined by the light microscope. Pollen grains are 3-colpate, isopolar, prolate, prolate spheroidal, spheroidal, subprolate, tectum reticulate. However, there is variation in thickness of exine.

*Int. J. Biol. Biotech., 2(2): 299-306, 2005.*

### **EFFECT OF "TASMAN SPIRIT" OIL SPILL ON MARINE PLANTS IN THE COASTAL AREA OF KARACHI**

**S.M. Saifullah<sup>1</sup> and Furqana Chaghtai<sup>2</sup>**

*<sup>1</sup>Mangrove Ecosystem Lab., Department, of Botany, University of Karachi, Karachi-75270, Pakistan*

*<sup>2</sup>Centre of Excellence in Marine Biology, University of Karachi, Karachi-75270, Pakistan*

### **ABSTRACT**

The present paper deals with the impact of "Tasman Spirit" oil spill on marine primary producers which occurred near Karachi Harbour on July, 27<sup>th</sup>, 2003. One year long study in the affected area revealed that phytoplanktons were seriously affected by oil spill but not so much seaweeds and mangroves. Very low species diversity of phytoplankton was observed as compared to previous observations in the same and adjacent areas but the standing crop (phytoplankton abundance) was not affected. Large size species dominated

over the smaller ones indicating adjustment to presence of low density oil on the surface of water. Centric diatoms outnumbered the pennate forms and armoured dinoflagellates the naked forms. The seaweeds were less affected. The attached forms on the buoys and floating forms survived the spill. However, those growing attached to small rocky patches on the beach died due to deposition of thick layer of crude oil, but later recovered soon after the oil spill was over along with barnacles. The mangroves do not grow in the affected area nor did the oil reach the adjacent mangrove stands, therefore, its effect on them could not be studied. However, the mangrove propagules and seedlings drifted in the area were all damaged and killed, thereby affecting the benthic food chain and also the reproductive potential of the mangroves of the adjacent areas.

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**DIVERSITY OF FUNGI IN THE SEDIMENTS OF TIGER SHRIMP (*PENAEUS MONODON* FABRICIUS) CULTURE PONDS, MALAYSIA**

**M. K. Abu Hena, F. Abdullah\*, O. Hishamuddin and K. Misri**

*Department of Biology, Faculty of Science, University Putra Malaysia-43400 UPM, Serdang, Selangor, Malaysia; \*Email: fidah@fsas.upm.edu.my*

**ABSTRACT**

The diversity of fungi in tiger shrimp *P. monodon* culture pond sediments was investigated. The culture pond types sampled were aged (>8 years), moderately aged (3 years) and new (<1 year); the former was situated in the state of Perak and the latter two in Malacca, Malaysia. Three sampling periods were selected, namely during stock (DS), middle of culture (MC) and after harvest (AH). Fungal propagules were found in sediment samples for all 3 sampling periods. Distribution of fungi was highest during MC for the aged pond but for the moderately aged and new ponds, the highest was at AH. The overall fungal distributions were found to increase with the increased culture period probably due to organic load during culture activities. The genus *Aspergillus* was the dominant group followed by *Penicillium* in shrimp pond sediments.

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**ON ABUNDANCE AND OCCURRENCE OF SERGESTIDS *SERGESTES* AND *SERGIA* (CRUSTACEA:DECAPODA) IN THE SAMPLES COLLECTED DURING INTERNATIONAL INDIAN OCEAN EXPEDITION (IIOE)**

**Q. B. Kazmi<sup>1</sup>, F. Yousuf<sup>2</sup> and S.S. Shaukat<sup>3</sup>**

<sup>1</sup>*Marine Reference Collection & Resource Centre, University of Karachi, Karachi-75270, Pakistan.*

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

<sup>3</sup>*Department of Botany, University of Karachi, Karachi-75270, Pakistan.*

**ABSTRACT**

The paper deals with holopelagic shrimps *Sergestes* and *Sergia* described from the Indian Ocean. The frequency of occurrence and abundance of *Sergestes* and *Sergia* in different regions of the Indian Ocean were determined based on the sub-sorted samples on board of nine international cruise ships during the International Indian Ocean Expedition 1960-1965. Of the 869 specimens, 1459 stations of *Sergestes* and 327 specimens, 608 stations of *Sergia* were identified and examined including the adults and juveniles of both the sexes.

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**SEED DISPERSAL PATTERN OF A COMPOSITE WEED *TRIDAX PROCUMBENS* L.**

**S. S. Shaukat<sup>1</sup>, I. A. Siddiqui<sup>1</sup> and A. Zarina<sup>2</sup>**

<sup>1</sup>*Department of Botany, University of Karachi, Karachi-75270, Pakistan*

<sup>2</sup>*Department of Botany, Federal Urdu University of Arts, Sciences and Technology, Karachi, Pakistan*

**ABSTRACT**

The dispersal pattern of a weed *Tridax procumbens* was investigated in an agricultural field. Two seed traps were designed, one to examine the dispersal pattern of isolated individuals and another to study the dispersal distances from a cluster of *T. procumbens* plants. The dispersal curves of both isolated individuals and cluster of plants followed an exponential model. Seeds dispersed in all directions but the movement was primarily in the direction of wind (westerly direction) while the movement was least in the leeward direction. The factors influencing anemochorous dispersal of composite seeds are discussed.

***Int. J. Biol. Biotech.*, 2(2): 329-349, 2005.**

**SEASONAL VARIATION IN STRUCTURE, COMPOSITION, PHYTOMASS AND NET PRIMARY PRODUCTIVITY IN A *DICHANTHIUM ANNULATUM* (FORSSK.) STAPF. DOMINATED COASTAL NON-SALINE SITE OF KARACHI, PAKISTAN**

**D. Khan<sup>1</sup>, M. M. Alam<sup>1</sup>, S. Shahid Shaukat<sup>2</sup> and M. Faheemuddin<sup>1</sup>**

<sup>1</sup>*Department of Botany, Government National College, Karachi, Pakistan*

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

**ABSTRACT**

The variation in composition, structure, phytomass and net primary productivity was analyzed in a *Dichanthium annulatum* (Forssk.) Stapf. dominated coastal community of Karachi, Pakistan. Phyto-ecological parameters of vegetation were studied at monthly

interval for a year. Only 10 species were encountered from the site. *D. annulatum* was the leading dominant throughout the year in association with *Indigofera oblongifolia* and *Cyperus rotundus*. The density of *Dichanthium* remained more or less unchanged throughout the year except slight increase in September. Other species such as *Cyperus rotundus* and *Alysicarpus scariosus* showed density peak in September. The relative abundance pattern of species was geometric throughout the year.

The changes in the aboveground live plant biomass (LB), standing dead (SD), litter (L) and belowground biomass were studied. LB was maximum ( $422.4 \text{ g}^{-2}$ ) in October and March ( $399.2 \text{ g}^{-2}$ ). LB related positively with rainfall and soil moisture content. The effects of rainfall were better represented in the month subsequent to its occurrence and remained noticeable for not more than up to 50- 60 days. SD was maximum in November ( $358.4 \text{ g}^{-2}$ ). Litter was minimum in September ( $50.6 \text{ g}^{-2}$ ) and maximum in May ( $159.7 \text{ g}^{-2}$ ). The below- ground biomass was larger than the aboveground biomass. Above- ground net primary productivity (ANP) as evaluated by various methods varied from 310 to  $704 \text{ g}^{-2} \cdot \text{year}^{-1}$  (average =  $496.1 \pm 90.63 \text{ g}^{-2} \cdot \text{year}^{-1}$ ; CV = 36.5%). Belowground net productivity (BNP) was  $754 \text{ g}^{-2} \cdot \text{year} \text{ g}^{-1}$ . Annual efficiency of energy capture by the primary producers was estimated to be 0.53% on the basis of half total solar radiation. Annual energy flow diagram through primary producer compartments is presented.

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### **ECOLOGICAL STUDY OF A RECREATIONAL LAKE LOCATED IN QAUID-E-AZAM PARK, KARACHI**

**M. Shoab, A. Mohsna and M. Nazia**

*Department of Zoology, University of Karachi, Karachi-75270, Pakistan*

#### **ABSTRACT**

Water plays a vital role in human life as it is used in almost every step. As concern to create opportunities to develop aesthetic senses in human it is necessary to construct some recreational lakes which can be used for many purposes like storage of water, culturing of ornamental and edible fishes, ornamental aquatic plants, provide habitat for aquatic birds and much more. For the long term existence of these artificial water reservoirs it is necessary to conduct an ecological survey including the physico-chemical features of water and assessment of biological communities along with their rate of abundance. The present study, was aimed to find out the impacts of human on water quality as well as on fauna and flora of a recreational lake located in Quaid-e-Azam park Karachi.

***Int. J. Biol. Biotech.*, 2(2): 357-363, 2005.**

### **HYDROLYSIS OF A FUNGICIDE, BUPRIMATE BY INDIGENOUS ACHROMOBACTER SPECIES**

**A. Nuzhat<sup>1</sup>, A. Jameela<sup>1</sup>, R. Munawar<sup>2</sup> and Atta-ur-Rahman<sup>2</sup>**

<sup>1</sup> Center for Molecular Genetics, University of Karachi, Karachi-5270, Pakistan;  
a\_nuzhat@yahoo.com

<sup>2</sup> H. E. J. Research Institute of Chemistry, University of Karachi, Karachi, 75270,  
Pakistan

## **ABSTRACT**

A soil bacterium (CMG500) capable of degrading a fungicide buprimate (Nimrod), was isolated from vegetable fields and identified as *Achromobacter* species. It harbors a catabolic plasmid pNS3. The isolate was resistant to streptomycin, penicillin, and ceferozone. The structure of the degraded product was elucidated using mass spectra, U. V. and N. M. R. It was found that the fungicide bupirimate (5-Butyl – 2-ethyl amino 6-methyl-4pyrimidyl dimethyl sulfamate was converted into 5- Butyl-2 ethyl amino 6-methyl –4 –pyrimidinol by *Achromobacter* species. Hydrolysis of buprimate fungicide resulted in the removal of dimethyl sulfamate group. The degrading genes for buprimate were present on a conjugative plasmid pNS3.

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### **BIOABSORBENT PRODUCTION BY CMG646: A MARINE ISOLATE**

**A. Nuzhat\*, N. Jamil and N. Jamil**

*Centre for Molecular Genetics, University of Karachi, Karachi-75270, Pakistan.*

*\*E-mail: a\_nuzhat@yahoo.com, Tel: 92-21-4966045, Fax: 92-21-4966045*

## **ABSTRACT**

Microbial products have been recognized as an integral component of natural products chemistry and microbes they are significant resource for environment friendly compounds, which have multiple industrial applications. One of the eco-friendly products of bacteria is bioabsorbent polymer. Biopolymer from bacteria offers a number of novel properties and commercial opportunities. CMG646, a marine isolate identified as *Pseudomonas aeruginosa* was found to produce two types of polymers. One of which is water-absorbing EPS that could absorb and retain water significantly more than 47 times of their own weight.

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### **APPLICATION OF PROBIOSIS TO POULTRY**

**S. H. Khan and F. A. Ansari**

*Department of Microbiology, University of Karachi, Karachi 75270, Pakistan*

## **ABSTRACT**



Probiotics for chickens are designed either to replace beneficial organisms that are not present in the alimentary tract or to provide the chicken with the effects of beneficial bacteria. *Salmonella typhi* colonizes the intestinal tract of poultry and causes food-borne illness in humans. Reduction of *S. typhi* colonization in the intestinal tract of poultry reduces potential carcass contamination during slaughter. The purpose of this study was to isolate, identify and determine the effect of avian-specific *Lactobacillus acidophilus* as probiotic, on the colonization, weight gain and disease resistance in chicken. Two groups, each containing five chicks, were designated as “probiotic” and “control” group. At placement, probiotic group chicks were orally administered with *L. acidophilus* for 2 weeks. As a result, an increased weight gain of this group was observed comparable to the control group. Competitive exclusion of intestinal microflora and resistance to *Samonella typhi* in *L. acidophilus* fed probiotic group was also observed. Antibiotic resistance pattern of the crop isolated probiotic and other *Lactobacillus* strain was determined. Production of antimicrobial substance by *L. acidophilus* was tested against Gram-positive and Gram-negative bacteria. Antibacterial activity was found against *S. aureus* and *M. luteus*. These findings indicate that probiosis can be applied as an alternative to antibiotic use and, for improving the production efficiency in the poultry industry.

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## **UNDERGROUND WATER CHARACTERISTICS OF MALIR RIVER CATCHMENT AREA**

**N. A. Khan<sup>1</sup>, M. A. Khan<sup>2</sup> and S. Naseem<sup>1</sup>**

<sup>1</sup>*Department of Geology, University of Karachi, Karachi-75200, Pakistan*

<sup>2</sup>*Institute of Environmental Studies, University of Karachi, Karachi-75200, Pakistan*

### **ABSTRACT**

This study evaluated the extent of physical, chemical and microbiological contamination in ground water of Malir River catchment area. Underground water samples were collected from 10 different locations of the catchment area including tributaries of Malir River during pre and postmoonsoon seasons, 2004. The samples were analysed for pH, total dissolved solids (TDS), total suspended solids (TSS), alkalinity, BOD<sub>5</sub>, Chloride, COD, hardness, nitrate and phosphates along with the organisms of public health importance. The average pH values ranged from neutral to alkaline (6.8-7.5), TDS 350-1322 and TSS 20-95 mg/l. The average concentration of chloride was not much as compared to WHO guide lines. The average concentration of BOD<sub>5</sub> (23.50-25.50 mg/l) and COD (529-532mg/l) represents the organic and inorganic contamination of ground water. The concentration of nitrate and phosphates was not much alarming however, their continuous accumulation poses serious health implications. This could possibly be due to indiscriminate use of inorganic fertilizers as well as the uncontrolled dumping of domestic wastewater generated by the rural communities. It is quiet alarming that none of the water sample was fit for human consumption from the public health point of view. The study reveals that a more intensive survey should be undertaken to determine the

possible sources of contamination of ground water aquifers of Malir River catchment area so as to uplift the environmental health and to protect ground water reserves from contamination on a logical long-term basis.

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**BACTERIOLOGICAL QUALITY AND CHLORINATION STATUS OF DRINKING WATER IN KARACHI REGION**

**M. A. Khan, O. Hany, M. Azeem, S. Jabeen, S. A. Hasan and M. Altaf Khan**

*Institute of Environmental Studies, University of Karachi, Karachi-75270, Pakistan.*

**ABSTRACT**

This cross sectional study investigates the status of drinking water of various sources including municipal water supply, water supply from vendors and mineral water. The city was divided district wise and the samples were collected from each district at the consumer end. Drinking water quality was examined by Most Probable Number (MPN) technique as per method described in APHA (1998) and the results were compared with WHO guidelines. It was found that municipal water from almost all the city is contaminated with the organisms of public health importance in amounts several magnitudes higher than any permitted standards.

*Int. J. Biol. Biotech.*, 2(2): 389-391, 2005.

**A STUDY OF THE TOXIC EFFECTS ON *BACILLUS ANTHRACIS* BY DRUGS OF PENICILLIN GROUP OF ANTIBIOTICS**

**F. S Rehmani<sup>1</sup> and M. Kashif<sup>2</sup>**

<sup>1</sup>*Department of Chemistry, University of Karachi, Karachi-75270, Pakistan*

<sup>2</sup>*Institute Of Bio-Chemistry, University Of Balochistan, Quetta, Pakistan*

**ABSTRACT**

*Bacillus anthracis* is gram positive, rod shaped bacterium frequently found in the environment and causes Anthrax disease which is common in animal but rare in human. In the present research work the favorable condition for the growth of *Bacillus anthracis* and confirmed it by Gram's staining and the growth in different media was observed, the effect of antibiotic was also observed.

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**BIOASSAY SCREENING OF SOME IRANIAN MEDICINAL PLANTS BY BIOAUTOGRAPHIC METHOD**

**M. Azadbakht<sup>1</sup>, A. Marston<sup>1</sup> and K. Hostettmann<sup>2</sup>**

<sup>1</sup>*Department of Pharmacognosy, Faculty of Pharmacy, Mazandaran University of Medical Sciences, Iran. Tel & Fax: +981513254060*

<sup>2</sup>*Institute de Pharmacognosie et Phytochimie, University de Lausanne, BEP, CH-1015 Lausanne, Switzerland*

## **ABSTRACT**

The methanolic and dichloromethane of three medicinal plants viz., *Pterocarya fraxinifolia*, (Juglandaceae), *Ilex spinigera* (Aquifoliaceae), *Pyrus boissieriana* (Rosaceae), were tested for their antibacterial activity against *Bacillus subtilis*, antifungal activity against *Candida albicans* and *Cladosporium cucumericum*, as well as for their larvicidal activity against *Aedes aegypti*. A bioautographic assay on TLC plates has been used for this screening. The methanolic extract of *P. fraxinifolia* was found to be the most effective extract against *C. cucumericum*, *C. albicans* and *Bacillus subtilis*. Two fractions of the *P. fraxinifolia* were the major constituents for these activities. Both fractions had naphthoquinone structure.

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## **RELATIONSHIP OF CELLULAR GLUTATHIONE CONCENTRATION WITH THE CYTOTOXICITY OF ACETAMINOPHEN IN DIFFERENT CELL LINES**

**F.H. Shirazi<sup>1</sup>, M. Skokrzadeh<sup>2</sup>, M. Abdollahi<sup>3</sup>, F.B. Rahimi<sup>4</sup> and L. Hossinzadeh<sup>1</sup>**

<sup>1</sup>*Department of Toxicology, Faculty of Pharmacy, Sheheed Beheshti University of Medical Science, Tehran, Iran*

<sup>2</sup>*Department of Toxicology, Faculty of Pharmacy, Mazandran University of Medical Science, Sari, Iran*

<sup>3</sup>*Department of Toxicology, Faculty of Pharmacy, Tehran University of Medical Science, Tehran, Iran*

<sup>4</sup>*Department of Pathology, Faculty of Medicine, Shaheed Beheshti University of Medical Sciences, Tehran, Iran*

## **ABSTRACT**

Acetaminophen is used clinically as an analgesic and antipyretic drug. Although acetaminophen is safe at therapeutic doses, it produces hepatic injury in both human and experimental animals, and also induces morphological transformation in cultured cells when given in excessive doses. The hepatic injury produced by acetaminophen is generally thought to be initiated by a reactive metabolite of acetaminophen, N-acetyl-p-benzo-quinoneimine (NAPQI), formed by cytochrome P450. NAPQI is initially detoxified by conjugation to reduce glutathione (GSH). A primary cellular target of Acetaminophen is GSH, which is an extremely important cellular antioxidant. A marked cellular GSH level change following the exposure to arsenic has been reported, which is inversely related to the intracellular accumulation of arsenic. In this study, we have investigated the effects of acetaminophen on the cellular total GSH level in different tumor and normal cell lines. Five different cell lines of human hepatic carcinoma

(HePG2), human lung adenocarcinoma (A549), human ovarian carcinoma (SKOV3), dog kidney (LLCPK1) and Chinese hamster ovary (CHO) cell lines were exposed to the IC<sub>50</sub> concentrations of acetaminophen for two hours. Acetaminophen cytotoxicity was measured using clonogenic assay, and the total cellular GSH level were analyzed using a photo metrically assay. Our results showed that acetaminophen had different degrees of cytotoxicities on different cell lines as shown by IC<sub>50</sub> values; 18.6 for HepG2, 4.16 for A549, 5.01 for SKOV3, 5.6 for LLCPK1, and 16.7 for CHO cell lines. According to our results, GSH level alterations after exposure to acetaminophen were also different for different cell lines; 24.21 for HepG2, 778.21 for A549, 977 for SKOV3, 1367.3 for LLCPK1, and 312.43 for CHO cell lines. It is concluded that acetaminophen undergoes different metabolic pathways in different cell lines that produces various species which might or might not bind to GSH. Although cells would increase their cellular GSH content after exposure to acetaminophen, but the superiority of either pathway in each cell line would determine the GSH consumption and therefore the cellular protection against the cytotoxicity of acetaminophen in each cell line.

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#### **THE ROLE OF C erb-B2 PROTO-ONCOGENE OVER-EXPRESSION IN ENDOMETRIAL HYPERPLASIA AND ADENOCARCINOMA**

**S. M. Hasan<sup>1</sup>, Fauzia Imtiaz<sup>2</sup>, S. Q. H. Naqvi<sup>3</sup> and S. A. H. Zaidi<sup>1</sup>**

<sup>1</sup>*Hamdard College of Medicine and Dentistry, Karachi, Pakistan*

<sup>2</sup>*The Aga Khan University Hospital, Karachi, Pakistan*

<sup>3</sup>*Peoples Medical College, Nawabshah, Pakistan*

#### **ABSTRACT**

A retrospective study was carried out on formalin fixed paraffin embedded blocks of 50 out of 392 diagnosed cases of hyperplasia and adenocarcinoma. The aim of this study was to compare the incidence of C erb-B2 Proto-oncogene over-expression in hyperplasia and adenocarcinoma of endometrium. The 5µ thick sections made and stained with H & E for review and diagnostic typing and grading of the cases. The immunohistochemical staining was done on sections using polyclonal rabbit anti erb-B2 ZYMED USA, and ZYMED 2<sup>nd</sup> Generation Immunodetection system to observe oncoprotein over expression. The grades were distributed of erb-B2 over expression in selected cases of adenocarcinoma was 66%, 66.66% and 75% for grade I, II and grade III respectively.

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#### **SUPPRESSION OF MELOIDOGYNE JAVANICA, THE ROOT-KNOT NEMATODE BY SOME ASTERACEOUS PLANTS IN PAKISTAN**

**I. A. Siddiqui<sup>1</sup>, S. S. Shaukat<sup>1</sup> and A. Zarina<sup>2</sup>**

<sup>1</sup>*Soil Biology and Ecology Laboratory, Department of Botany, University of Karachi, Karachi-75270, Pakistan.*

<sup>2</sup>*Department of Botany, Federal Urdu University of Arts, Sciences and Technology , Karachi, Pakistan.*

## **ABSTRACT**

The influence of shoot and root extracts of nine plant species including *Gaillardia aristata*, *Cosmos bipinnatus*, *Helianthus annuus*, *Tagetes erecta*, *Tagetes patula*, *Chamomilla recutita*, *Matricaria discoidea*, *Calendula officinalis* and *Zinnia elegans* belonging to the family Asteraceae was tested towards egg hatch and mobility of *Meloidogyne javanica*, the root-knot nematode juveniles *in vitro*. In general, root extracts of the plant species were more effective in the inhibition of nematode compared to the corresponding shoot extracts. When plant species were compared, shoot extract of *Z. elegans* inhibited egg hatch most while shoot extract of *T. erecta* caused greatest mortality of *M. javanica* juveniles. When compared with the controls, soil amendment with *Z. elegans* significantly reduced *M. javanica* population densities in soil and subsequent root-knot development in tomato while *T. erecta* failed to produce such effects. Similarly, soil amendment with *Z. elegans* resulted in a significant increase in plant height. Whereas both amendments enhanced fresh weight of shoot compared to the controls, none of the amendments had an influence on root growth of tomato plants.

*Int. J. Biol. Biotech.*, 2(2): 415-418, 2005.

## **EFFECT OF DIFFERENT STRAINS OF RHIZOBIUM SPP. IN THE CONTROL OF ROOT INFECTING FUNGI AND GROWTH OF CROP PLANTS**

**Shahnaz Dawar<sup>1</sup>, F. Perveen<sup>1</sup> and Atif Dawar<sup>2</sup>**

<sup>1</sup>*Department of Botany, University of Karachi, Karachi-75270, Pakistan*

<sup>2</sup>*Department of Physics, Federal Urdu University of Arts, Sciences and Technology, Gulshan-e-Iqbal, Karachi-75300, Pakistan*

## **ABSTRACT**

Biocontrol potential of *Rhizobium* and *Bradyrhizobium* species against soil borne root infecting fungi was tested. All strains showed infectivity and produced nodules on mungbean. Rhizobia used as seed dressing and soil drenching showed a significant increase in shoot length, root length, shoot weight and root weight in mungbean and okra plants. The number of nodules were highest in mungbean roots where Rhizobia were used as seed dressing and soil drenching. Seed dressing and soil drenching with Rhizobia were found effective methods for the control of soil borne root infecting fungi like *Fusarium* spp, *Macrophomina phaseolina* and *Rhizoctonia solani* on mungbean and okra.

*Int. J. Biol. Biotech.*, 2(2): 418-423, 2005.

## **ANALYSIS OF LINDANE RESIDUES IN SARI AND NEKA CULTIVATED RICE OF IRAN**

**M. Shokrzadeh<sup>1</sup>, A.G. Ebadi<sup>2</sup> and M. Moslemi<sup>3</sup>**

<sup>1</sup>*Department of Toxicology, Mazandaran University of Medical Sciences, Sari, Iran*

<sup>2</sup>*Department of Biology, Islamic Azad University of Sari Sari, Iran*

<sup>3</sup>*Department of Fishery, Islamic Azad University of Jouybar, Jouybar, Iran*

## **ABSTRACT**

In Iran, organochlorine insecticides such as lindane are used for agriculture purpose, in rice-field to destroy the pests. Due to high stability and long life, lindane can remain in rice crop and creates health problem for human after eating rice. Due to the rate of consumption of this group of pesticides in Mazandaran province, Iran, a sectional inspection was performed at Tarom rice crop of Sari and Neka cities. This pesticide was drew out sampling rice of the different regions of these cities with using organic solvent N-hexane, then examined with gas chromatography. The results showed that nearly all samples have the residues of this lindane at ppb level which is non toxic but continuoue use may cause health problems such as liver disorder or gastrointestinal cancer.

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## **PREPARATION OF PHARMACEUTICAL BEE-WAX AND PHYSICO-CHEMICAL ANALYSIS**

**H. Asgarirad and F. Pourmorad**

*Mazandaran University of Medical Sciences, Faculty of Pharmacy, Sari,Iran*

## **ABSTRACT**

Regarding the importance of beeswax, we evaluate the preparation of the pharmaceutical beeswax in Iran. The raw beeswax was provided from the waxes prepared by *Appis Mellifera* L in two different seasons (fall and spring). In order to remove honey and other debris, wax pieces should be washed for several hours. Then, wax was melted by several methods by using hot water, steam water and organic solvents, in a controlled temperature. After filtering and cooling the wax sheets was analyzed according to British Pharmacopoeia. The same procedure was performed to prepare the white wax in the presence of a bleaching agent like hydrogen peroxide.

Some physicochemical values were out of standard limits by using ether for preparing spring and fall yellow wax. Using ethanol as a solvent for extraction was not suitable and decreased the values significantly. Regarding to those samples that were prepared by hot water we could get a suitable result. The spring white and yellow waxes which were prepared by hot water method in temperature below than 85° C is recommended as a suitable and economic method with the same results comparing with BP (British pharmacopoeia) standard beeswax.

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**PREPARATION OF CHITIN AND CHITOSAN FROM SHRIMP SHELL OF PERSIAN GOLF AND THE DEGREE OF DEACETYLATION DETERMINATION**

**F. Pourmorad<sup>1</sup>, M. A. Ebrahimzadeh<sup>1</sup>, S. Honary<sup>2</sup>, P. Ebrahimi<sup>1</sup> and M. Orangiyan<sup>1</sup>**

<sup>1</sup>*Medicinal Chemistry Department, Faculty of Pharmacy, Mazandaran University of Medical Sciences, Sari, Iran*

<sup>2</sup>*Pharmaceutics Department, Faculty of Pharmacy, Mazandaran University of Medical Sciences, Sari, Iran*

**ABSTRACT**

Chitin, a natural polysaccharide, widely exists in the outer skeleton of arthropods such as shrimp. Chitin and its deacetylated derivative chitosan have been reported to be useful for biomedical applications like wound healing ointments and dressings, drug delivery system, and also shows several biological activities. It is predicted that chitosan will be one of the most demanding material in 2005 and about 75% of chitosan will be used in biomedical areas as a key material.

In this study chitin and chitosan were prepared from shrimp shells in Iran for the first time and the degree of deacetylation was estimated by analytical methods such as FT- IR and <sup>1</sup>H- NMR.

Dilute HCl and then NaOH were mixed with shrimp shell powder in a proper condition in order to obtain chitin. Chitin was refluxed in 30, 45 and 60% NaOH solutions for 1-3 h. The mixture was filtered and the residue washed with water and dried.

Chitin (1.5 g) obtained from the above procedure, and the chitosan yield was 60- 90%. One of the chitosan samples obtained in this study was soluble that FT- IR and <sup>1</sup>H- NMR determined the degree of deacetylation of this sample as 76 and 76.9% respectively.

We could reach to an easy and optimized method by changing the reaction time, reagents concentration and elimination of decolorizing agent (decolorizing was done during the repetition of purification process) in process.

A relationship between the degree of deacetylation and solubility properties of chitosan was confirmed as other chitosan samples that we obtained in this work could not be solved well and it needed to use other analytical devices such as solid NMR.

*Int. J. Biol. Biotech.*, 2(2): 433-439, 2005.

**EFFECT OF CR(III) COMBINE WITH ATRAZINE ON PROTEIN, CARBOHYDRATE, AMINO ACID AND CHLOROPHYLL CONTENTS IN VIGNA RADITA (L.) WILCZEK**

**R. Azmat<sup>1</sup> R. Perveen<sup>2</sup>, I. I. Naqvi<sup>2</sup> and S. S. Shaukat<sup>3</sup>**

<sup>1</sup>*Jinnah University For Women, North Nazimabad, Karachi, Pakistan*

<sup>2</sup>*Department of Chemistry, University of Karachi, Karachi-75270, Pakistan*

<sup>3</sup>*Department of Botany, University of Karachi, Karachi-75270, Pakistan*

## **ABSTRACT**

The effect of Cr (III) combined with atrazine on the level of carbohydrates, proteins, amino acids in roots and shoots, and that of chlorophyll, of bean plants were investigated. Application of Cr (NO<sub>3</sub>)<sub>3</sub> amounting to 10 to 200 ppm, combined with atrazine at 10 to 100 ppm, resulted into a decrease in carbohydrate, protein and amino acid contents in shoots and enhancement in roots. Chlorophyll "a" content decreased and chlorophyll "b" was increased in bean plants with the exclusive presence of chromium and that chromium combined with atrazine lowered both of these. A significant decrease (p<0.01) in length of shoot and an increase in root length was observed with an increase concentration of Cr (III) and atrazine. A little growth stimulant effect was also observed at 5ppm concentration of atrazine.

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### **THE EFFECTS OF HUMAN CHORIONIC GONADOTROPIN (HCG) ON PROLACTIN RECEPTORS (PRLR) OF CROP SAC EPITHELIUM**

**M. Ahmad<sup>1</sup>, R. Hasan<sup>1</sup>, M. Ahmad<sup>2</sup>, A. Qureshi<sup>3</sup> and A. Javaid<sup>1</sup>**

<sup>1</sup>*Department of Physiology, University of Karachi, Karachi-75270. Pakistan*

<sup>2</sup>*Department of Physiology, New York Medical College, USA*

<sup>3</sup>*Westchester Hospital, Valhalla, New York, USA.*

## **ABSTRACT**

This study deals with the effect of human chorionic gonadotropin (hCG) on crop sac prolactin receptors (PRLR). Direct hypodermal injections of 45 IU hCG per day for 4 days produced a diametric response of 2.28 cm. This indicates that hCG synergises PRL. Since hCG promotes synthesis of pigeon's milk by binding to specific receptors. Whereas, injections of vehicle only administrated control crop sacs produced a sub specific response.

*Int. J. Biol. Biotech.*, 2(2): 445-448, 2005.

### **EFFECT OF FEEDING DIFFERENT COMBINATIONS OF SUNFLOWER MEAL AND COTTON SEED MEAL ON THE PERFORMANCE OF BROILER CHICKS**

**F.R. Durrani, N. Chand., M. Farooq., R. Ali and Z. Durrani**

*Department of Poultry Science, NWFP Agricultural University, Peshawar, Pakistan*

## **ABSTRACT**

This study was planned to investigate the effect of different combinations of sunflower meal and cotton seed meal in isonitrogenous and isocaloric rations on the performance of



broiler chicks. Five experimental rations designated as A, B, C, D and E having sunflower meal and cotton seed meal (0, 3, 6, 9 and 12% sunflower meal with corresponding levels of 12, 9, 6, 3 and 0 % of the cotton seed meal) were fed to 250 broiler chicks, randomly distributed into 5 main groups, A, B, C, D and E, where each main group was further divided into 5 sub groups contained 10 birds each. The birds were reared for a pre-experimental period of 6 days on commercial ration followed by 33 days of experimental period. Average weight gain, feed consumption, feed efficiency, dressing percentage, cost of feed per unit weight gain and mortality were used as criteria of response. The mean body weight gain per chick was 1441, 1464, 1533 and 1484 g. The body weight gain in group C was significantly higher ( $P<0.05$ ) than other groups. The average feed consumption per chick was 3241, 3431, 3433, 3460 and 3454 g. The feed consumption in group D was significantly higher ( $P<0.05$ ) as compared with other groups. The mean feed efficiency (feed/gain) was 2.24, 2.34, 2.23, 2.33 and 2.33. The mean dressing percentage was 64.90, 64.18, 66.04, 64.31 and 64.17. The average cost of feed per kg body weight gain was Rs.17.28, 17.90, 16.95, 17.50 and 17.35 and mortality was 0, 0, 2, 0, and 3 for treatment A, B, C, D and E, respectively. Considering all the parameters of response, it is concluded that both sunflower meal and cotton seed meal may be used at 6% level each in the broiler ration for optimum performance.

*Int. J. Biol. Biotech.*, 2(2): 449-453, 2005.

#### **EFFECT OF FEEDING LOW PROTEIN BROILER FINISHER DIETS SUPPLEMENTED WITH METHIONINE AND LYSINE ON THE OVERALL PERFORMANCE OF BROILER CHICKS**

**F.R. Durrani\*, Qutab Khan, M.A. Mian and Z. Durrani**

*Department of Poultry Sciences, Faculty of Animal Husbandry and Veterinary Sciences  
\*NWFP Agricultural University Peshawar, Pakistan; Email:: [drfazliraziq@hotmail.com](mailto:drfazliraziq@hotmail.com)*

#### **ABSTRACT**

Research was conducted to determine the extent to which the dietary protein may be reduced with adequate methionine and lysine supplementation. Five hundred broiler chicks were kept on commercial starter diet for a pre-experimental period of twenty-eight days. On day-29 post hatching, one hundred and sixty mixed chicks were randomly allotted to four experimental treatments with four replicates per treatment. Chicks were fed four different isocaloric diets formulated to contain 20, 18, 16 and 14% crude protein with appropriate supplementation so as to maintain 1.0% lysine, 0.72% methionine+cystine and adequate methionine in each case. Data on body weight gain, feed consumption, feed efficiency and feed cost per kg body weight gain were recorded. On day 46, three birds per replicate were randomly selected and slaughtered to collect abdominal fat and dressing weight of each bird. The mean body weight gain per chick at the end of experimental period was 1062, 1064, 1074 and 914 g for treatment A, B, C and D, respectively. Results indicated that lowering the crude protein level of the diet-up to 16% with adequate methionine and lysine supplementation had no deleterious effect on body weight gain. There was significant drop in weight gain when the level of crude

protein was further reduced to 14%. The mean feed consumption per chick during the experimental period was 2785, 2801, 2836 and 2818 g for treatment A, B, C and D, respectively. The mean feed-gain ratio was 2.62, 2.63, 2.64 and 3.08 for treatment A, B, C and D, respectively. There were no significant differences in the feed efficiency among treatment A, B and C. However, feed efficiency was significantly poor in treatment D (14% crude protein diet). The mean abdominal fat weight per bird was 28.8, 28, 28.1 and 32.2 g for treatment A, B, C and D, respectively. Mean abdominal fat expressed as percent of dressed weight was 2.33, 3.00, 3.02 and 3.58% for treatment A, B, C and D, respectively. The mean dressing percentage at the end of experimental period was 58.0, 57.7, 57.9 and 57.8 percent for treatment A, B, C and D, respectively. The mean cost per kg body weight gain was Rs. 26.46, 26.32, 25.56 and 30.08 for treatment A, B, C and D, respectively. The feed cost per kg body weight gain was the lowest for treatment C having 16% crude protein. These results indicated that the NRC (1984) recommendation of 20% protein for finisher period may be reduced with the required level of methionine and lysine supplementation.

***Int. J. Biol. Biotech.*, 2(2): 455-458, 2005.**

## **IN VITRO MATURATION AND VITRIFICATION OF CATTLE AND BUFFALO OOCYTES IN DIFFERENT MEDIA**

**R. Hussain<sup>1</sup>, N. Ullah<sup>2</sup> and S. Akhter<sup>1</sup>**

<sup>1</sup>*Department of Zoology, University of arid Agriculture, Rawalpindi (UAAR), Pakistan.*

<sup>2</sup>*Animal Reproduction, National Agriculture Research Center (NARC), Islamabad, Pakistan*

*e-mail: [Hussainsabir2002@yahoo.co.uk](mailto:Hussainsabir2002@yahoo.co.uk)*

### **ABSTRACT**

The immature oocytes have long been used for experimental trials for betterment of production of genetically superior breed both in terms of meat and milk production. In these experiments immature oocyte were harvested from the buffalo (*Bubalus bubalis*) and cattle ovaries (obtained from slaughter house) and transported to the laboratory at 28 °C in phosphate buffer saline solution (PBS) within two hours of slaughtering. The ovaries were sliced with a ten unit blade slicer in PBS supplemented with 0.4% bovine serum albumin (BSA) and 250 iu/L heparin. Good quality oocytes were incubated in four different media i.e. TCM199, Ham's F10, MEM, and IVF Universal medium (medicult) supplemented with 10 iu/ml follicle stimulating hormone (FSH), 10 iu/ml Leutinizing hormone (LH) and 1.0 µg/ml estradiol 17-β. The average maturation rates for cattle and buffalo oocytes were 56.0±1.9 % and 55.4±0.8 % respectively. There was no significant difference in maturation rates of oocytes among these media. The immature vitrified oocytes were incubated after thawing at 37 °C for maturation rates. No difference could be detected in the maturation rates between cattle (52.2±0.13 %) and buffalo oocytes (47.85±0.2 %). The maturation rates of vitrified COCs were significantly lower after vitrification than untreated COCs, both in cattle and buffalo.

*Int. J. Biol. Biotech.*, 2(2): 459-463, 2005.

**BIOLOGICAL CONTROL OF *PARTHENIUM* II: ALLELOPATHIC EFFECT OF *DESMOSTACHYA BIPINNATA* ON DISTRIBUTION AND EARLY SEEDLING GROWTH OF *PARTHENIUM HYSTEROPHORUS* L.**

**A. Javaid, T. Anjum and R. Bajwa**

*Department of Mycology and Plant Pathology, University of the Punjab, Quaid-e-Azam Campus Lahore, Pakistan*

**ABSTRACT**

In Punjab waste-lands are being rapidly occupied by a noxious weed *Parthenium hysterophorus* L.. field surveys revealed that the allelopathic grass *Desmostachya bipinnata* Stapf. restricts the spread of this weed. The field study disclosed that both the frequency and density of *P. hysterophorus* was lower at *D. bipinnata* dominating localities as compared to nearby areas without the infestation of this grass. Aqueous root and shoot extracts of *D. bipinnata* of 5, 10, 15 and 20% (w/v) concentrations significantly reduced the germination of *P. hysterophorus*. A 20% root and shoot extract completely arrested the germination of *P. hysterophorus*. Aqueous extracts also inhibited the root and shoot length as well as seedling biomass of *P. hysterophorus*. Shoot extract was more inhibitory than root extract.

*Int. J. Biol. Biotech.*, 2(2): 465-474, 2005.

**EFFECT OF SEASONAL VARIATION ON ZINC CONTENT OF SOIL, FORAGE, WATER, FEED, AND SMALL RUMINANTS GRAZING THE NATIVE AND IMPROVED PASTURE DURING DIFFERENT SEASONS IN THE SEMI-ARID REGION OF PAKISTAN**

**Z. I. Khan<sup>1</sup>, E. E. Valeem<sup>2\*</sup>, A. Hussain<sup>1</sup>, M. Ashraf<sup>1</sup>, M. Y. Ashraf<sup>3</sup>, L.R. McDowell<sup>4</sup>, M. S. Akhtar<sup>1</sup> and M. A. Mirza<sup>5</sup>**

<sup>1</sup>*Department of Botany, University of Agriculture, Faisalabad-Pakistan.*

<sup>2</sup>*Govt. Degree Sci. & Com. College Gulshan-e-Iqbal, Karachi-75300, Pakistan.*

<sup>3</sup>*Nuclear Institute for Agriculture and Biology (NIAB) Faisalabad, Pakistan.*

<sup>4</sup>*Animal Science Department University of Florida P.O. Box 110910 Gainesville, F.L. 32611-0691*

<sup>5</sup>*Department of Animal Nutrition, University of Agriculture, Faisalabad-Pakistan.*

**ABSTRACT**

An investigation was conducted to evaluate the zinc status of three different classes of grazing goats on the basis of zinc concentrations in pasture and animal samples as affected by season and class of animals in central Punjab, Pakistan. Soil, water, plasma, urine, and fecal zinc levels of lactating and male goats did not show seasonal differences while forage, feed and milk zinc concentrations in lactating and faeces in non lactating

animals had seasonal variations with greater concentrations in winter than in summer except feed which was higher in summer than that in winter. Mean soil, forage and plasma zinc concentrations were adequate for plants and animals requirements during both seasons. Milk concentration of zinc showed seasonal variation with being consistently higher in winter than in summer. In both seasons, most milk samples had lower/higher zinc concentrations than reported reference values of goat milk. The overall zinc status of these goats based on pasture and animal samples may be considered adequate mainly due to supplemental feed provided containing different amount of zinc, since forage zinc concentration were deficient particularly in summer season.

*Int. J. Biol. Biotech.*, 2(2): 475-478, 2005.

### **ASSOCIATION OF DIFFERENT CHARACTERS FOR IMPROVEMENT OF BRASSICA ACCESSIONS**

**A. Raouf, F. A. Khan, S. Rauf, M. A. Iqbal**

*Department of Plant Breeding and Genetics, University of Agriculture, Faisalabad-Pakistan.*

#### **ABSTRACT**

Thirteen accessions of *Brassica* including a standard one were sown in a randomized complete block design in four replications. Data on various quantitative characters were recorded for comparative performance. Primary branches, secondary branches, plant height, number of pods per plant, pod length, number of seeds per pod and thousand seed weight exhibited positive correlation with seed yield per plot, but secondary branches and oil percentage showed a negative correlation with seed yield per plot.

*Int. J. Biol. Biotech.*, 2(2): 479-481, 2005.

### **RESPONSE OF COTTON CULTIVARS TO VARIOUS $K^+$ / $Na^+$ RATIOS DURING THEIR GROWTH IN SALINE CONDITIONS**

**A. N. KHAN<sup>1</sup>, R.H. QURESHI<sup>2</sup> AND N. AHMAD<sup>2</sup>**

<sup>1</sup>*Department of Soil Sciences, Faculty of Agriculture, Gomal University, D.I.Khan, Pakistan.*

<sup>2</sup>*Department of Soil Sciences, University of Agriculture Faisalabad,,Pakistan.*

#### **ABSTRACT**

Four cotton cultivars differing in tolerance to stressed conditions were grown in solution culture at salt concentrations of 75,150 mol m<sup>-3</sup> and control. The  $K^+/Na^+$  ratios of 1:1, 1:2.5, 1:5,1:10 and 1:20 were maintained at each salinity level. At salt stress of 75 mol m<sup>-3</sup>, the  $K^+$  /  $Na^+$  ratios of 1:2.5 and 1:20 produced significantly ( $P \leq 0.05$ ) higher fresh matter yield as compared to other ratios. At salt stress of 150 mol m<sup>-3</sup>, the yield differences due to external  $K^+$  /  $Na^+$  ratios were non significant. Higher shoot growth

reduction was found at  $K^+/Na^+$  of 1:1 in both salinity levels. It is concluded that the  $K^+ : Na^+$  ratio of 1:2.5 (low salinity) and 1:10 (high salinity) had least inhibitory effect on the growth of cotton cultivars as compared to all other  $K^+ / Na^+$  ratios. Performance of NIAB 78 and MNH 93 was superior to Ravi and D 9.

*Int. J. Biol. Biotech.*, 2(2): 483-488, 2005.

## **DIFFERENCE IN SALT TOLERANCE OF FOUR VARIETIES OF GREENGRAM**

**Shakil Ahmed**

*Department of Mycology and Plant Pathology, University of the Punjab, Quaid-e-Azam Campus, Lahore-54590 Pakistan*

### **ABSTRACT**

Four high yielding *Vigna radiata* (L.) Wilczek genotypes were tested for their salt tolerance at germination, 35, 55 days after emergence of seedlings, and at maturity (81DAE). The genotypes displayed a substantial variability for salinity tolerance at all growth stages. The salt tolerance limits ( $EC_{50}$  values) of genotypes varying from 2.7 dS  $m^{-1}$  to 4.1 dS  $m^{-1}$ . Enhanced salt tolerance was expressed by high germination percentage, reduced tip burning, low chlorosis and necrosis of young leaves, greater number and area of green leaves, high chlorophyll contents, low leaf senescence and high seed yield per plant. A genotype 245/7 exhibited tolerance at germination and 35 DAE while genotype NM-54 was the most tolerant at later growth stages.