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**ACQUISITION OF MALE STERILITY FOR TOMATO HYBRID SEED PRODUCTION**

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**ABSTRACT**

Tomato (*Lycopersicon esculentum* Mill.  $2n=2x=24$ ) belonging to family solanaceae is highly self-pollinated with perfect flower, therefore, use of male sterile lines is essential for developing commercial tomato hybrid. The acquisition of male sterile line with good combining ability, sufficient style length to expose the stigmatic surface for cross pollination and simple maintenance with low cost of production has been a paramount interest of tomato breeders. Male sterility either genetic or non-genetic makes the pollen unavailable or such tomato flowers are incapable of setting seed through selfing. Thus, a male sterile line can be used as female parent and can produce a bulk quantity of seed due to cross-pollination. The seed set on the male sterile plant is hybrid, which is used for growing commercial hybrid. On an average, under field conditions, a normal tomato variety yields 16-25 tones/ha while hybrids often produce 60-80 tones/ha. However, to exploit the benefits, farmers have to buy fresh seed in every cropping season. In this review article a brief survey on nature of tomato male sterility and its possible utilization in the development of cost effective hybrid development program has been discussed from breeding point of view.

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**CRIMEAN CONGO HEMORRHAGIC FEVER: A BIOLOGICAL WEAPON**

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**ABSTRACT**

Crimean Congo Hemorrhagic Fever (CCHF), one of the most severe human viral diseases, has a death rate of up to 30 %. The highly pathogenic nature of the virus and rapidly fatal course of the disease indicate the need for prompt and effective measures for management of victims of the disease.

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**THE ROLE OF NUTRITION IN PREVENTION OF BREAST CANCER AND INTRODUCTION OF SOME ANTI-CANCEROUS SUBSTANCES**

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## **ABSTRACT**

Eighty percent of cancers are due to the factors that have been identified and can potentially be controlled. Cancers of the breast, prostate, and colon have received more research attention than other forms of the cancers. It begins to expand into a lump that can invade healthy tissues and spread to other parts of the body. Thirty percent of cancers are caused by tobacco. Lung cancer is the most obvious example. Cancers of the mouth, throat, kidney, and bladder are also caused by tobacco. Breast cancer is a malignant tumor that has developed from cells of the breast. A malignant tumor is a group of cancer cells that may invade surrounding tissues or spread (metastasize) to distant areas of the body. The disease occurs almost entirely in women, but men can get it, too. The remainder of this document refers only to breast cancer in women. Dietary factors also play a significant role in cancer risk. At least one-third of annual cancer deaths in the U.S. and one-fourth in Iran are due to dietary factors. A recent review on diet and cancer estimates that up to 80 percent of cancers of the breast are due to dietary factors. The link between diet and cancer is not new. According to a report of *Scientific American*, "cancer is most frequent among those branches of the human race where carnivorous habits prevail". Numerous research studies have shown that cancer is much more common in populations consuming diets rich in fatty foods, particularly meat, and much less common in countries eating diets rich in grains, vegetables, and fruits. One reason is that foods affect the action of hormones in the body. They also affect the strength of the immune system and other factors. While fruits and vegetables contain a variety of vitamins, minerals, antioxidants, and phytochemicals to protect the body, by contrast, recent research shows that animal products contain potentially carcinogenic compounds which may contribute to increased cancer risk, especially breast cancer.

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## **A CLADISTIC ANALYSIS OF THE GENERA OF FAMILY DYTISCIDAE (COLEOPTERA) FROM PAKISTAN**

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## **ABSTRACT**

Eleven genera to accommodate 18-species of the family Dytiscidae Westwood are cladistically analysed and the relationship are discussed in the light of apomorphies found in the above included representatives of the family.

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**TAXONOMIC STUDY OF THE GENUS *CALOTHRIX* (NOSTOCOPHYCEAE, CYANOPHYTA) FROM LAHORE, PAKISTAN**

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**ABSTRACT**

Specimens of the blue-green alga, *Calothrix* C.A. Agardh have been collected from various freshwater habitats in the district of Lahore, Pakistan during December 1996 – April 2000 in different seasons. They were taxonomically investigated and found to belong to 7 species.

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**BIODIVERSITY OF THE GENUS *LYNGBYA* (NOSTOCOPHYCEAE, CYANOPHYTA) IN THE NORTHERN AREAS OF PAKISTAN**

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**ABSTRACT**

Specimens of the blue-green alga, *Lyngbya* C.A. Agardh have been collected from various freshwater habitats in the districts of Gujranwala, Jauharabad, Jhang, Lahore, Pasrur, Sheikhpura and Sialkot in the province of the Punjab, from water bodies at Bahrain and Kalam in N.W.F.P. (Pakistan) as well as from Neelum Valley in Azad Kashmir during December 1996 – July 1999 in different seasons. They were taxonomically investigated and found to belong to 16 species.

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**TAXONOMIC STUDY OF THE GENUS *SPIRULINA* (NOSTOCOPHYCEAE, CYANOPHYTA) FROM NORTHERN AREAS OF PAKISTAN**

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## ABSTRACT

Specimens of the blue-green alga, *Spirulina* Turpin have been collected from various freshwater habitats in the districts of Jhang, Lahore, Sheikhpura and Silkot in the Punjab Province of Pakistan as well as from different water bodies in Muzaffarabad, Chenari and Neelum Valley of Azad Kashmir during June 1996 – April 2000. They were taxonomically investigated and found to belong to 7 species.

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**A NEW SPECIES OF THE GENUS *BUTHOTUS* VACHON (ARACHNIDA: SCORPIONIDA: BUTHIDAE) FROM PAKISTAN WITH SPECIAL REFERENCE TO CHROMATOGRAPHY AND ELECTROPHORESIS OF ITS VENOM**

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## ABSTRACT

A new species of the genus *Buthotus* Vachon is described from Moro, Sindh, Pakistan with special reference to its male genitalia, Gel chromatography and electrophoresis of the venom. This species is compared with its closest allies and the relationships is briefly discussed using apomorphic characters

*Int. J. Biol. Biotech.*, 1(4): 489-495, 22004.

**A NEW SPECIES OF THE GENUS *HEMIBUTHUS* POCOCK (ARACHNIDA: SCORPIONIDA: BUTHIDAE) FROM PAKISTAN WITH SPECIAL REFERENCE TO CHROMATOGRAPHY AND ELECTROPHORESIS OF ITS VENOM**

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## ABSTRACT

A new species of the genus *Hemibuthus* is described from Rohri Sindh, Pakistan with special reference to its male genitalia, electrophoresis and chromatography of the venom.

This species is compared with its closest ally and the relationships is briefly discussed using autapomorphic characters.

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**BIODIVERSITY OF SCENTLESS SQUASH BUGS FROM PAKISTAN:  
REDESCRIPTION OF *RHOPALUS MACULATUS* (FIEBER) (HEMIPTERA:  
RHOPALIDAE) AND ITS RELATIONSHIPS**

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**ABSTRACT**

*Rhopalus maculatus* (Fieber), a pest of Indian corn and vegetables in Pakistan, is redescribed from different areas of Pakistan with special reference to its male and female genitalia. Its cladistic relationships are also briefly discussed with the genus *Rhopalus* Schilling and of the genus *Rhopalus* within its tribe Rhopalini Stal.

*Int. J. Biol. Biotech.*, 1(4): 503-506, 22004.

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

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**ABSTRACT**

*Myllocerus dentifer* (Fabricius) 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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**STUDY ON THE DEVELOPMENT OF GENITALIA OF *STREPTOCEPHALUS  
SIMPLEX* GURNEY**

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**ABSTRACT**

The first abdominal segments are distinguishable after 90 h. larval stage of *Streptocephalus simplex* which are analgen of the external genitalia. At 130 h, larval stage, two lobe like structures arise from the first abdominal segments which are protuberance of the external genitalia. The female and male genitalia are distinguishable at 150 hrs larval stage. The genitalia of both the sexes increased in length up to 650 h, larval stage.

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***IN VITRO PROPAGATION OF TURMERIC, CURCUMA LONGA L.***

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**ABSTRACT**

In order to provide pathogen-free, uniform planting material, micropropagation was investigated as an alternative method for propagation from rhizomes. Emerging buds from sprouting rhizomes of turmeric were used as explants. Shoot initiation generally started within 5 days after inoculation on MS medium containing 1.0 mg/l BAP. Multiple shoots were induced on MS medium supplemented with 1.0 mg/l BAP + 0.25 mg/l Kin. Rooting of 100 % was achieved by transferring an individual micro shoot to MS medium containing 1.0 mg/l NAA. Plantlets were successfully transferred to potting media of soil containing equal amount of sand + clay + compost. in greenhouse. After acclimatization plants were successfully established in the field with 100 % survival rate. All the plants were found to be morphologically uniform.

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***AN IN VITRO STUDY OF REGENERATION AND MICROPROPAGATION OF MENTHA ARVENSIS***

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**ABSTRACT**

Shoot tip and nodes were used as explant source and were cultured on MS media containing different concentrations of auxins and cytokinins. Shoots were induced on MS media containing 1.0 mg/l BAP. The newly formed shoots were transferred on MS medium containing different concentrations of hormones for shoot multiplication. Maximum 35 shoots were obtained on MS media containing 1.0 mg/l BAP + 0.5 mg/l NAA. Microcuttings of 3-3.5 cm in length were harvested from proliferating cultures and were shifted for rooting in MS media containing different concentrations of NAA and IBA. Well rooted plants were successfully established in sterile sand following hardening phase of 20 days.

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**EFFECT OF ADDITIONAL CARBON AND NITROGEN SOURCES ON THE PRODUCTION OF XYLANASE BY A MUTANT STRAIN OF *ASPERGILLUS NIGER* GCBCX-20**

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**ABSTRACT**

The present study is concerned with the effect of carbon and nitrogen sources on the production of xylanase by a chemically mutated strain of *Aspergillus niger* GCBCX-20. Different carbon and nitrogen sources were tested for the production of xylanase. The production of enzyme was found to be maximum (280 U/ml) when 2.5% wheat bran with 0.5% starch were used in the fermentation medium. The enzyme production was significantly improved (300 U/ml) when fermentation medium was supplemented with 0.25% urea. The optimum period of fermentation and incubation temperature were 48 h and 30 ° C respectively.

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**PREPARATION OF LIGNIN FROM WOOD DUST AS VANILLIN SOURCE AND COMPARISON OF DIFFERENT EXTRACTION METHODS**

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**ABSTRACT**

Lignin, after cellulose, is the principal constituent of the woody structure of higher plants, which acts as a cementing agent to bind the matrix of cellulose fibers into a rigid woody structure. Trees are the most abundant sources of lignin. Coniferous woods (softwoods) usually contain more lignin (ca 28%) than deciduous woods (hard woods, ca 24%). The starting material for vanillin production is the lignin present in sulfite wastes from the cellulose industry. In the present study extraction of lignin from wood dust as vanillin source and comparison of different extraction methods was carried out. Sawdust (*Fageto carpinetum* and *Abies nordmanniana*) (2g) was continuously extracted with ethanol – benzene (1:1), then with ethanol and finally boiled with water. The mixture was filtered, dried and mixed with 72% H<sub>2</sub>SO<sub>4</sub>; then it was diluted with water to a 3% H<sub>2</sub>SO<sub>4</sub> solution and boiled FT-IR spectra of extracted lignin compared with standard lignin. The lignin (1 g.), nitrobenzene (3 ml) and aqueous sodium hydroxide solution (125 ml of 8% solution) were heated at 160°C for 3 h with violent agitation, in a sealed, stainless steel bombs. After cooling, the alkaline reaction mixture was steam distilled to remove nitrogenous

product, filtered and the wood residue washed with alkali and water, and dried. The filtrate and washing were acidified to pH 3 and the residue mixture extracted with ether. The ethereal extract was shaken successively with sodium bisulfate solution. The aqueous bisulfate solution was acidified, and then extracted with ether. Removal of the solvent, gave vanillin as a white powder. FT-IR spectra and TLC with standard vanillin used for identification. Yield of the extract was 35%. FT – IR spectra of extracted lignin and standard lignin had same functional groups regions. Yield of the prepared vanillin was 29 % as a white powder, mp. 79 - 83°C. FT-IR spectra and TLC (in  $R_f = 0.45$ ) with standard vanillin approved the structure.

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**STRUCTURAL STUDIES ON ROOT NODULES OF *DALBERGIA SISSOO* ROXB**

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**ABSTRACT**

Nodules of *Dalbergia sissoo* Roxb. were globose woody and rough in texture present in the axils of lateral roots. Rhizobial infection on root surface of *D. sissoo* started with curling of root hair. Infection threads were seen in the young infected cells. Persistent infection threads were also observed in the bacteroid zone of *D. sissoo*. A continuous layer of sclereids was observed in *D. sissoo*. Bacteroid region consisted of infected and uninfected (interstitial) cells intermingled with each other. Cells of bacteroid region were loosely arranged. Starch grains were observed in the interstitial cells.

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**EFFECTS OF SYSTEMIC FUNGICIDE (BENLATE) ON GERMINATION, SEEDLING GROWTH, BIOMASS AND PHENOLIC CONTENTS OF *VIGNA RADIATA* (L.) WILCZEK AND *V. MUNGO* (L.) HEPPER**

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**ABSTRACT**

Consequences of seed dressing with benlate (systemic fungicide) on germination, seedling growth and biomass of *Vigna radiata* and *V. mungo* were studied. Seed dressing increased the germination of both the tested species of *Vigna*. Application of benlate had greater effects on root and shoot growth of *V. radiata* as compared to control. Root and shoot phenols were substantially elevated in both treated species following treatment with benlate particularly at higher concentrations (1500 and 2000ppm). *V. mungo* was less



affected in terms of fresh and dry weights compared to *V. radiata*, exhibiting some degree of tolerance to systemic fungicide, benlate.

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**GENETICS OF LEAF RUST AND AGRONOMIC TRAITS IN WHEAT (*TRITICUM AESTIVUM* L.)**

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**ABSTRACT**

Gene action was ascertained in 8 × 8 diallel crosses for plant height, tillers per plant, number of grain per spike, 100-grain weight, grain yield per plant, biological yield per plant, harvest index and leaf rust incidence in wheat under leaf rust environment. Highly significant additive and dominance effects with directional dominance effects, asymmetrical gene distribution and important role of specific genes were indicated for all the traits except harvest index where directional dominance effects were absent. Maternal and reciprocal effects were non-significant. Plant height and leaf rust incidence were controlled by additive genes with partial dominance, harvest index by complete dominance whereas over dominance gene action predominated for other traits. Gene action was simple as with absence of non-allelic gene interaction for all traits. The variety Crow possessed maximum dominant genes for grains per spike, grain yield, biological yield, harvest index and leaf rust incidence. While, LU 26 possessed maximum dominant genes for plant height and grain weight, MH 97 for tillers, Parula for grain yield and MH 97, Nacozari and Inqilab 91 for leaf rust incidence. Maximum recessive genes were displayed by Chenab 70 and SA 42 for grain yield, biological yield, harvest index and leaf rust incidence. The cross MH 97 × Crow proved best for tillers (11.97), SA 42 × Parula for grain number (60.1), LU 26 × Nacozari for grains weight (5.58g) and MH 97 × LU 26 for grain yield (24.67g). The crosses with minimum values of AUDPC were resistant for leaf rust epidemic; LU 26 × Crow, LU 26 × Parula, LU 26 × Inqilab 91, SA 42 × Crow and MH 97 × Crow. Hence, Crow, Parula and Inqilab 91 would be successfully exploited as a source of leaf rust resistance for wheat breeding programme.

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**EFFECT OF  $\gamma$ -IRRADIATION ON IMBIBITIONAL LEAKAGE, GERMINATION AND GROWTH OF WHEAT SEEDS**

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## ABSTRACT

Wheat seeds (cv. Inqalab) were treated with 0-100 Kr  $\gamma$ -radiation. The damage done to seeds was measured in terms of electrical conductivity (E.C.) of the leachate of imbibing seeds, the amounts and rates of leakage of inorganic and organic electrolytes in the leachates and the germination performance and growth of seedlings. Results demonstrate that  $\gamma$ -irradiation increased the E.C. of imbibing seeds compared with the un-irradiated control. Amounts of  $\text{Na}^+$ ,  $\text{K}^+$  and orthophosphate ions ( $\text{Pi}$ ) increased in leachates of treated seeds in dose-dependent manner compared with the control. Similar patterns were observed when soluble sugars and total amino acid contents effluxed during initial hours of imbibition were measured. Leakage of these electrolytes had little effect on the number of seeds germinated, though the rates of germination were decreased in seeds treated with higher doses of radiation. Dose of  $\gamma$ -radiation at 1Kr was stimulatory to root and shoot development compared with that of control whilst 0.5Kr and radiation doses of 5-100 Kr were inhibitory for growth. Chlorophyll contents (a, b, total) in young leaves also increased but only in seeds treated with 1Kr compared with that of control. The present data reveals variations in the permeability of various ions through the modified membrane system of irradiated seeds during early hours of germination and later during the active phase of seedling growth.

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## EFFECTS OF ARTIFICIAL SEAWATER TREATMENTS ON IMBIBITIONAL LEAKAGE AND GERMINATION OF WHEAT SEEDS

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## ABSTRACT

In the present work, wheat seeds (cv. Inqalab) were treated with full strength (FS), half strength (HS) and one-fourth strength (OS) of ASW for 0.5, 2, 4, 8 and 24 hours and seeds dried to their original moisture contents. Pretreated seeds were soaked in water for 4h and the changes in electrical conductivity (E.C.) of leachates were measured. The E.C. of leachates of these treated seeds depended upon the type and duration of treatment. Maximum E.C. value ( $34.92 \pm 3.97 \mu\text{S/cm/seed}$ ) was found in 24h FS treatment and lowest in 0.5h OS treated seeds. When 24h leachates of these pre-treated seeds were quantified for the efflux of  $\text{Na}^+$  and  $\text{K}^+$  ions,  $\text{Na}^+$  were many times higher in the treated seeds ( $9.1 \pm 2.3$  to  $38.2 \pm 5.2 \text{ ppm/seed}$ ) than the control ( $3.75 \pm 0.52 \text{ ppm/seed}$ ), reflecting the pre-uptake of  $\text{Na}^+$  during all these treatments. However,  $\text{K}^+$  levels decreased from  $33.5 \pm 4.2 \text{ ppm/seed}$  in the control to  $5.0 \pm 1.9 \text{ ppm/seed}$  in treated seeds, indicating the pre-efflux of these ions during the duration of treatment. Amounts of amino acids and soluble sugar contents effluxed reflected that much of them had already leaked out during the treatment duration though soluble sugar contents exhibited consistent

decreasing profiles from 0.5h to 24h in all treatment regimens. These treatments severely reduced the percentage germination of seeds as the duration of treatment increased with no germination in 8h and 24h treatments. The results demonstrate that the effects of ASW treatments are on the rates and amounts of efflux of electrolytes leaked in treated seeds. No relationship existed between the efflux of electrolytes during treatment and percentage seed germination.

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**EFFECT OF VARIOUS PACKING MATERIALS ON STORAGE AND VASE LIFE OF CUT ROSE FLOWERS**

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**ABSTRACT**

The influence of various packing materials, viz. cellophane paper, butter paper and aluminum lamination foil, on the storage and vase life of cut rose flowers (*Rosa hybrida* L. cvs. Kardinal, Rosy Cheeks and Whisky Mac) were studied. Flowers were harvested at two different stages, i.e., tight bud stage and loose bud stage. Data regarding storage life (days) and vase life (days) of flowers of all the treatments were collected by following standard procedures. When flowers of *R. hybrida* L. cv. Kardinal were kept in aluminium lamination foil at tight bud stage, both storage and vase life were maximum followed by *R. hybrida* L. cv. Rosy Cheeks in the same packing material. Cultivar Whisky Mac harvested at loose bud stage and placed in cellophane paper exhibited minimum storage and vase life. Flowers should be harvested at tight bud stage and packed in aluminum lamination foil for prolonging their shelf life.

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**ETHNOBOTANICAL STUDIES IN HARAMOSH AND BUGROTE VALLEYS (GILGIT)**

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**ABSTRACT**

This paper deals with the Ethnobotany of Haramosh and Bugrote valleys of Gilgit Agency (Northern Areas, Pakistan), including studies on geography and ethnology. This work is based upon two years field studies (2001-2002). During this period 260 species were collected and ethnobotanical uses of 20 species are described here. The present study indicates that the peoples of Haramosh and Bugrote valleys show certain

similarities in the uses of plants with other people of Northern Areas. Although the Flora of Pakistan can be considered as an inventory of the plants of Pakistan, but Haramosh and Bugrote valleys contain certain such localities which have not been floristically explored to date. Besides this, no ethnobotanical work has been done before in these valleys.

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**PERIODICITY IN THE AIRBORNE FUNGI OF KARACHI CITY**

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**ABSTRACT**

A survey on atmospheric fungi of Karachi city was performed during 2002. The genus *Aspergillus* was the major component among the fungal flora. Maximum potential in fungal concentration was observed at morning as compared to noon and evening. Collectively, the fungal spores significantly decreased in the order of *Aspergillus* spp.> *Alternaria* spp.> *Cladosporium* spp.> *Penicillium* spp. Out of 49, an appreciable number of fungal species were allergenic, such as *Alternaria*, *Aspergillus*, *Cladosporium* and *Penicillium* spp., etc.

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**STUDIES ON THE SOIL MYCOFLORA OF KARACHI COAST**

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**ABSTRACT**

Sixteen soil samples were collected from different localities of Karachi coast. Soil samples were analyzed for soil texture, pH, water content, organic carbon, total nitrogen content, electrical conductivity and for the study of soil mycoflora. Almost all samples showed a sandy texture except that of Hub soil which showed clay loam texture. pH of the soil samples ranged between 7.9-8.1, organic carbon 1.4-6.6%, nitrogen content 0.98-2.38%, water content 0.8-14% and electrical conductivity of soil samples were 1.05-75.2 mS/cm. Mycoflora of soil samples was detected by different techniques viz., baiting technique for isolation of *Rhizoctonia solani*, direct plating technique, serial dilution technique and wet sieving for the isolation of *Macrophomina phaseolina*. Twenty eight species of 16 different genera were isolated and identified. Results showed that highest numbers of fungi were isolated by soil dilution technique whereas, lowest number of fungi by wet sieving technique. *Aspergillus niger* and *A. flavus* exhibited highest frequency of occurrence by all 4 techniques. *Aspergillus terreus*, *Rhizopus stolonifer* and *Syncephalastrum racemosum* also appeared as dominant fungi from all the soil samples. Baiting technique resulted in significant isolation of *R. solani* whereas results of wet

sieving did not yield sclerotial structures of *M. phaseolina*.

***Int. J. Biol. Biotech.*, 1(4): 603-611, 22004.**

**NEMATOCIDAL, ANTIFUNGAL AND ALLELOPATHIC ACTIVITIES OF  
*AMARANTHUS VIRIDIS* L.**

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**ABSTRACT**

The investigation disclosed that although aqueous extract of *Amaranthus viridis* did not significantly influence egg hatch of *Meloidogyne javanica* *in vitro*, the extract did cause substantial mortality of *M. javanica* juveniles at both 24 and 48 h. Ethanolic extract of powdered shoot of *A. viridis* did not exert any inhibitory effect on radial growth of *Rhizoctonia solani* *in vitro* but the growth of *Macrophomina phaseolina* and *Fusarium solani* was slightly inhibited. Soil amendment with chopped shoot material of *A. viridis* at 5% concentration significantly reduced galling intensity due to *M. javanica* in mungbean roots grown in non-sterilized soil but not in sterilized soil. *Amaranthus viridis* at 2.5% concentration did not affect root-knot development in either sterilised or unsterilized soil. When incorporated in soil at 5%, *A. viridis* in both the soils markedly reduced plant height and fresh weight of mungbean roots and shoots. Soils amended with 5% *A. viridis* suppressed root-knot nematode disease either directly through the production of nematocidal compounds or indirectly by altering the soil fungal community structure, rendering it disadvantageous to the nematode.

***Int. J. Biol. Biotech.*, 1(4): 613-618, 22004.**

**EVALUATION OF SOME CHEMICALS AGAINST ROOT KNOT  
NEMATODES, *MELOIDOGYNE INCOGNITA***

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**ABSTRACT**

Twenty seven chemicals of different nature were screened for their nematicidal potential against root knot nematodes *in vitro*. All the test chemicals showed nematicidal effect of varying degree on emergence of root knot larvae from eggs. Among these maximum reduction (100%) in hatching was observed with Pyridin 3-aldehyde, 3-Methyl pyridium followed by Katrex (99%) and Oxalic acid (98%) after 144 h of exposure. All test chemicals exhibited nematicidal effects (mortality of nematode larvae) on root knot nematodes. Of these chemicals Oxalic acid, 3-Methyl pyridium, Katrex and T-26 were found more effective causing more than 90% larval death after 72 h of exposure. Similarly all test chemicals were found to inhibit penetration of nematode larvae into tomato roots.

***Int. J. Biol. Biotech.*, 1(4): 619-623, 22004.**

**EFFECT OF SOME PYRIDINE DERIVATIVES ON *MELOIDOGYNE INCOGNITA* INFECTING TOMATO PLANTS**

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**ABSTRACT**

A series of twelve pyridine derivatives were evaluated for nematicidal activity against *Meloidogyne incognita* under greenhouse conditions. Five of these 2-aminopyridine derivatives e.g. 1a, 1b, 2d, 2e and 3a, showed promising nematicidal activity compared to the standard nematicide carbofuran. The highest reduction in galls were obtained with compounds 1a (88.19%) followed by 1b (80.20%) and 3c (81.60%) at 0.05 gm/kg. Also, compound **1a** proved to be highly effective against nematode followed by 2d, 1b, 2e and 3a which showed 89.32, 76.32, 75.85, 74.06 and 71.69 %, reduction in soil nematode population respectively. The activity pattern was found to be highly dependent on the structure modification and dosage rate of the compounds. All of the tested compounds had no phytotoxic effect on tomato seedlings, except compound 3c.

***Int. J. Biol. Biotech.*, 1(4): 625-630, 2004.**

**INTESTINAL CONTRACTIONS UNDER THE INFLUENCE OF ETHANOL USED FOR SIMPLE AND SUCCESSED DRUG DILUTIONS**

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**ABSTRACT**

Ethanol (Eth) is frequently used both as solvent for many drugs and as a vehicle for many medicinal (i.e., allopathic and homeopathic) mixtures and dilutions. No significant

difference between simple and succussed dilutions were found on ileal (intestinal) muscles of rabbit except at 2x and 84% ethanol. Simple dilutions of ethanol have been found to decrease the intestinal rate of contraction immediately after administration. The rate was increased after three minutes of administration except at 95% Eth and 1x, Acetylcholine (ACh) and Adrenaline (Adr) dilution in ethanol. The succussed dilutions of ethanol itself also decreased the rate of contraction immediately (1x) and after three minutes of administration (at 1 and 2x). These results suggest that ethanol inhibits the smooth muscle activity due to a probable reduction in cross bridge cycling. However, this effect of ethanol seems to be more pronounced and long lasting after succussion.

***Int. J. Biol. Biotech.*, 1(4): 631-633, 22004.**

### **INFLUENCE OF BIO-MIX ON THE VISCERAL ORGANS DURING BACTERIAL ENTERITIS IN BROILER CHICKENS**

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#### **ABSTRACT**

Bio-Mix (Tinospora based multiherb extract) was used against bacterial enteritis. Bacterial enteritis was experimentally induced in 60 chicks by the oral administration of 2 ml *E. coli* and *Salmonella typhi* suspension ( $10^9$  organisms/ml) while 30 chicks (group C) were kept as control. From the next day group A (30 chicks) was treated with Bio-Mix @100gm/50kg feed for 5 days and B group (30 chicks, untreated with Bio-mix) was kept as control. The diseased birds of group B showed increased weight of liver due to bacterial infection, as compared to group A and C. The weight of spleen was non-significantly increased within group B and was comparable to group A and C. Non significant difference in the mean heart weight of three experimental groups of chicks was observed at the age of 28 and 32 days.

***Int. J. Biol. Biotech.*, 1(4): 635-639, 22004.**

### **BLOOD ANALYSIS OF BROILER CHICKS AFFECTED WITH HYDROPERICARDIUM SYNDROME (HPS) IN KARACHI**

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#### **ABSTRACT**

The present study was carried out at the Poultry Physiology Unit, Department of Physiology, University of Karachi and samples collected from the poultry farms located in the suburbs of Karachi. Hydropericardium syndrome (HPS) an infection of Avian Adenovirus Type-4 was reported in Karachi (Pakistan) during 1987 but is now widespread in other poultry regions. Disease has caused heavy economic losses to the poultry industry in Pakistan. Moreover, the isolation of the causative agent has been well documented but the evaluation of blood for biochemistry and hematology in HPS affected broiler chicks (age 3 to 5 weeks) is still not known. Present study is designed in the light of analyzing the blood for formed elements and ions. Agar gel immuno diffusion test has also been performed to confirm the presence of HPS infection in the birds. Since little is known about the physiological status of the bird during the course of disease and the accumulation of jelly like fluid in the pericardial cavity strongly suggests an abnormal osmotic environment during infection. The study is highly conclusive in revealing a significant difference ( $P < 0.05$ ) among the control and the tested birds for the clinical chemistry and blood parameters evaluated which may be attributed for the accumulation of jelly like fluid in the pericardial cavity.

*Int. J. Biol. Biotech.*, 1(4): 641-654, 22004.

#### **HISTOPATHOLOGICAL AND ULTRASTRUCTURAL STUDIES ON THE TOXIC EFFECT OF PRIANIL C-R (LITHIUM CARBONATE) IN MOUSE KIDNEY**

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#### **ABSTRACT**

This study was carried out to investigate the histopathological and ultrastructural alterations in the kidney of Swiss albino mice in response to the administration of prianil C-R (lithium carbonate ) at a dose level of 2.32 mg/mouse daily for 30 days (therapeutic dose) and 0.58 mg/mouse daily for 90 days ( quarter the therapeutic dose) . Our results demonstrated severe changes involved both glomeruli and renal tubules in mice treated with high dose of lithium. The histopathological changes of the glomeruli included hypertrophied glomeruli, shrunk urinary space and increased mesangial matrix. Altered podocytes, ballooning , hypertrophy or focal fusion of the secondary foot process and thickening of the glomerular basement membrane were recorded. The proximal convoluted tubular cells were severely affected . They have pleomorphic irregular shaped nuclei , swollen mitochondria with vesicular cristae, dilated rough endoplasmic reticulum and hypertrophied Golgi apparatus . The brush border was lost in some areas of proximal tubular cells. The changes in the distal convoluted tubular cells are less pronounced and included dilated nuclear membrane, hypertrophied Golgi apparatus, , abnormal mitochondria and vacuolated cytoplasm .The pathological alteration induced in the renal tissue after low dose of prianil C-R were approaching those induced by the high dose , however , they were less remarkable .



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**LITHIUM – INDUCED CHANGES IN MUSCLES AND NEUROMUSCULAR JUNCTIONS**

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**ABSTRACT**

The effect of Priamil C-R (lithium carbonate) on the structure of skeletal muscles and neuromuscular functions of Swiss albino mice was investigated. with at a dose level of either 2.32 mg/mouse, daily for 30 days or 0.58 mg/mouse, daily for 90 days. Mice treated with lithium at the high dose level resulted in significant degenerative changes in the histological and subcellular structures of both myofibrillar and non-myofibrillar components of the flexor digitorum muscle. These degenerative changes were less pronounced in animals treated with low dose of lithium and were probably secondary to the nerve and motor end-plate degeneration observed in this study.

*Int. J. Biol. Biotech.*, 1(4): 667-672, 22004.

**EFFECT OF SILYMARIN ON HISTOPATHOLOGICAL AND HISTOCHEMICAL LESIONS INDUCED BY THE ANTIMALARIAL DRUG CHLOROQUINE IN THE LIVER OF ALBINO MICE**

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**ABSTRACT**

The hepatoprotective effect of silymarin on histopathological and histochemical alterations induced by the antimalarial drug, chloroquine was studied in albino mice. Administration of chloroquine at a dose level of 10 mg/kg body weight, 4 times per week for 3 weeks induced many histopathological changes in the liver such as leucocytic infiltrations, cytoplasmic vacuolization of hepatocytes and congestion of blood vessels. Histochemical observations revealed marked reduction in total carbohydrates, DNA and total protein contents in the hepatocytes. Treating animals with chloroquine and silymarin led to an improvement in both histopathological and histochemical alterations. The hepatoprotective effect of silymarin was attributed to its antioxidant and free radicals scavenging properties.

*Int. J. Biol. Biotech.*, 1(4): 673-975, 2004.

**MEASUREMENT OF LEAD, CADMIUM AND CHROMIUM IN FIVE SPECIES OF MOST CONSUMED FISH IN CASPIAN SEA**

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<sup>3</sup>*Department of Biology, Faculty of Science, University of Urmia, Urmia, Iran*

**ABSTRACT**

In order to measure the amount of lead, cadmium and chromium in five species of most consumed fish viz., Koli, kilka, kafal, kapur and sefid in five fishery areas viz., Bandar Torkaman, Chalooos and Babulsar in the Caspian sea region. Seventy specimens were selected, five fish in each group were prepared by the method of dry ashing in atomic absorption spectrophotometry. Results of the present study showed the level of the three elements (Pb, Cd, Cr) in the fishing areas of Babolsar, that lead is the highest in Kafal fish ( $x = 0.015894$  ppm), cadmium and chromium in Kilka fish ( $x = 0.05853$  and  $x = 0.41336$  ppm, respectively). This level is high which is quite alarming.

*Int. J. Biol. Biotech.*, 1(4): 677-679, 2004.

**QUALITATIVE ANALYSIS OF LEAD, CADMIUM, CHROMIUM AND ZINC IN VEGETABLES (*SPINACIA OLERACEA* L.) AND (*RAHANUS SATIVUS* L.)**

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**ABSTRACT**

In the present study analysis in Meandering province was done on two plants i.e., *Spinacia oleracea* L. and *Raphanus sativus* L. The samples were taken from ten regions and five sample from each plant weighing 100 that the sample was first washed and dried and then with dry ashing method the samples were prepared by atomic absorption spectrometry in order to evaluation Pb, Cd, Cr, Zn. The result from this research based on statistical analysis and ANOVA evaluation shows a meaningful relation between the amount of lead and regions. ( $P < 0.05$ ) and also comparison between these mean numbers shows that in Eastern station lead has the highest amount with average 5.152 ppm *Raphanus* and 4.48 ppm in *Spinacia*. Regarding other metals the results are below standard although with the respect to the obtained results we feed that there is a great

potential for hazardous substance in the region. There is a need for a serious analysis about this subject in the region.

***Int. J. Biol. Biotech.*, 1(4): 681-686, 22004.**

**VARIATION IN SOIL AND FORAGE MINERALS OVER TWO GRAZING SEASONS AT DIFFERENT SAMPLING PERIODS IN A SEMIARID REGION OF PAKISTAN**

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**ABSTARCT**

A two seasonal study was conducted to determine the macro mineral status of goats' grazed forages and soil in southern Punjab, Pakistan. Soil and forage samples were collected fortnightly for two seasons. Sampling period fluctuations were observed in all soil and forage minerals for both seasons. Seasonal effects were observed in calcium, magnesium, and potassium for forages and in potassium and magnesium for soil. Soil Ca and Mg level were found to be above the critical levels and likely to be adequate for the normal growth of plants growing therein, whereas soil K and Na were in marginal deficient levels during summer and moderate deficient level of soil Na during winter. The levels of K and Mg in soil were supra optimal and Ca and Na low during winter than those during summer. Forages contained severe deficient level of K and moderate deficient level of Na during the winter season, whereas marginal deficient level of Ca and Mg and severe deficient levels of K and Na were found during summer but forage Ca and Mg levels during winter were adequate for the requirements of ruminants.

***Int. J. Biol. Biotech.*, 1(4): 687-692, 22004.**

**FLUORIDE LEVELS IN DRINKING WATER IN THE DISTRICTS OF KARACHI**

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**ABTRACT**

This study was designed to assess the fluoride levels in drinking water in the Karachi, Pakistan. A total of 125 water samples were collected from 5 districts in Karachi. A fluorimeter was used in the analyses of water samples for fluoride levels. The results

showed that fluoride levels vary between 0.10 and 0.655 ppm. About 19% of the population in Karachi city, was exposed to very low fluoride levels (<0.10 ppm), while 19% of the population in this area was exposed to fluoride levels ranging from 0.10 to 0.40 ppm. A higher percentage of the population (i.e. 77%) in Karachi region was exposed to medium fluoride levels (0.40 – 0.80 ppm); 16% in District Central, 8% in District West, 32% in District Malir, 16% in District South and 24% in District East. The findings of this study can serve as a baseline data for water fluoridation and other dental preventive programs in the area.

***Int. J. Biol. Biotech.*, 1(4): 693-698, 22004.**

#### **ARSENIC LEVELS IN DRINKING WATER OF KARACHI REGION**

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#### **ABSTRACT**

This study was designed to determine the arsenic concentration in drinking water of Karachi. A total of 125 water samples were collected from 5 districts in Karachi. *Gutzeit method*, was used for the determination of arsenic levels in the range of 1-100 µg. The results showed that Arsenic levels vary between 0 to 200 ppb. About 66.6% of the ground water samples have arsenic concentration less than 50 ppb whereas 9.5% of the samples fall in the range of 100 – 150 ppb. It is very alarming that the tanker water bears a very high concentration of arsenic out of which 16.6% of the samples ranged from 50 – 100 ppb and 5.5% had concentration of arsenic >150 ppb. It is also surprising that the KWSB water is also contaminated with arsenic where 4.6% of the samples have the levels more than 150 ppb. The findings of this study describe the spatial distribution of arsenic concentrations in drinking water of Karachi city which can serve as a baseline data for water treatment and to disseminate awareness in general public regarding the possible health implications of consuming as containing water. It can be argued that long term exposure with arsenic contaminated drinking water would lead to serious health implications in Karachi city.

***Int. J. Biol. Biotech.*, 1(4): 699-703, 22004.**

#### **EFFECT OF INJECTABLE ERYTHROPOIETIN AND HEMODIALYSIS ON BLOOD HEMOGLOBIN, SERUM CREATININE AND BLOOD UREA LEVELS IN CHRONIC RENAL FAILURE PATIENTS**

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## **ABSTRACT**

The administration of recombinant human erythropoietin (r-HuEPO) is in trials all over the world to stimulate the process of erythropoiesis and hence to cover the state of anemia. In this study two-month treatment of erythropoietin (EPO) was administered subcutaneously along with hemodialysis to chronic renal failure (CRF) patients and found it very effective in raising blood hemoglobin levels and to cure anemia. After two-month treatment, blood Hb levels increased from  $7.20 \pm 0.43$  g/dl to  $9.60 \pm 0.47$  g/dl while blood urea and serum creatinine levels decreased from  $202.9 \pm 29.9$  mg / dl and  $10.06 \pm 1.44$  mg / dl to  $147.4 \pm 4.48$  mg / dl and  $7.37 \pm 2.24$  mg / dl respectively.

*Int. J. Biol. Biotech.*, 1(4): 705-708, 22004.

## **ROLE OF $\alpha$ TOCOPHEROL IN GLUTAMATE INDUCED BEHAVIORAL CHANGES**

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## **ABSTRACT**

Glutamate is associated with neurotransmission toxicity, such toxicant may destroy cellular structure within nervous system, however dysfunction of nervous system may occur without evidence of altered cellular structure these neurotoxicant express in terms of altered behavior or impaired performance in neurological tests. Present work was designed to evaluate effect of glutamate on behavior if any neurological dysfunction occur and secondly to assess the role of  $\alpha$  Tocopherol as neuroprotective being an antioxidant and free radical scavenger.

*Int. J. Biol. Biotech.*, 1(4): 709-717, 22004.

## **AN INVESTIGATION OF THE GROWTH PROFILES OF PAKISTANI CHILDREN**

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## **ABSTRACT**

The NGDS (National Growth and Developmental Standards for the Pakistani Children) Pilot Project was initiated in 1998 to establish Pakistan-based anthropometrical data library and growth charts, to formulate mathematical models, which predict growth

parameters, to write softwares, which generate detailed growth profiles and to develop inexpensive anthropometry instruments from local resources, which could be employed in obtaining anthropometric measurements of Pakistani rural and slum-area children. Standing and sitting heights, shoulder widths, weights and mid-upper-arm circumferences are measured on over 2000 healthy children. Mathematical procedure/software was developed, which takes as input heights and weights of biological parents, and those of child at 2 successive occasions, 6 months apart. The output is a detailed growth profile indicating stunting and wasting (if present), overweight/underweight conditions, height velocity, rate of weight gain/loss and biomass index (comparison of all three with references). Failure to grow may be the first indication of a major underlying problem. The authors recommend growth monitoring and analysis of all 4-10 year old children using this software.

***Int. J. Biol. Biotech.*, 1(4): 719-720, 22004.**

**A SEARCH FOR BETAINES WITHIN THE IRANIAN *ACHILLEA***

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**ABSTRACT**

In order to determine the presence or variation of betaine components within *Achillea* plants, 5 different species of *Achillea* viz., *A. millefolium*, *A. tenuifolia*, *A. conferta*, *A. biebersteinii* and *A. talagonica*, were collected from different regions of Iran and screened semi-quantitatively on TLC using typical reaction with dragendorff reagent. Among them, only above ground parts of *A. talagonica* showed presence of choline as the main nitrogen containing constituent. Choline was isolated from flowering heads of *A. talagonica* and identified with spectroscopic data of NMR.

***Int. J. Biol. Biotech.*, 1(4): 721-722, 22004.**

**OCCURRENCE OF ROOT NODULES IN *ACACIA LEUCOPHLOEA* (ROXB.) WILLD**

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**ABSTRACT**

In the present study nodules have been reported on the roots of *Acacia leucophloea* from Karachi, Pakistan.

***Int. J. Biol. Biotech.*, 1(4): 723-724, 22004.**

**EFFECT OF MONOCHROTOPHOS AND CYHALOTHRIN ON COMMON QUAILS *COTURNIX COTURNIX***

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**ABSTRACT**

The effect of monochrotophos and cyhalothrin was studied against common quails (*Coturnix coturnix*). Two dose levels of monochrotophos (0.5% ) and cyhalothrin (0.0625%) i.e., 125 µl and 250 µl of each were applied, respectively. In the present study cyhalothrin was found more toxic compared to monochrotophos.

***Int. J. Biol. Biotech.*, 1(4): 725-726, 22004.**

**INSECTICIDAL ACTIVITY OF *CASSIA ITALICA* AGAINST TREE HOPPER, *OXYRHACHIS TARANDA***

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**ABSTRACT**

The n-hexane fraction of *Cassia italica* was tested for its insecticidal activity against tree hopper, *Oxyrhachis taranda* by impregnation method. The LD<sub>50</sub> was found to be 22.38 mg / cm<sup>2</sup>.

***Int. J. Biol. Biotech.*, 1(4): 727-728, 22004.**

**NEMATOSTATIC AND NEMATICIDAL ACTIVITY OF ENTOMOGENOUS FUNGUS *TOLYPOCLADIUM NIVEUM***

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**ABSTRACT**

Dichloromethan extract of entomogenous fungus *Tolypocladium niveum* was found toxic to 2<sup>nd</sup> stage juveniles of plant parasitic nematode, *Meloidogyne incognita* and free living nematode, *Panagrellus redivivus*. The LD<sub>50</sub> for root knot nematodes was found to be <2000 ppm and for free living nematodes it was <1000 ppm in 48 h.