

***Int. J. Biol. Biotech.*, 1(3): 255-266, 22004.**

METHODS OF DETERMINING MICROBIAL BIOMASS IN SOIL – A REVIEW

F. Azam, S. Farooq and A. Lodhi

Nuclear Institute for Agriculture and Biology, Faisalabad, Pakistan

e-mail: asim6006@fsd.comsats.net.pk

ABSTRACT

Microbial biomass is a small but labile and living component of soil organic matter involved in most biogeochemical processes in terrestrial ecosystems. It interacts with ecosystem productivity by regulating nutrient availability, determining soil C storage, and contributing to the atmospheric CO₂ from respiration. In view of the significance of microbial biomass in ecosystem functioning, immense efforts have been made to devise and simplify the methods of determination. Interest in the development of new methods and improvement in the available ones got impetus following the introduction of chloroform fumigation incubation method in 1976. Since then a multiplicity of methods have been proposed and practiced. This paper presents a critical review of the most commonly used methods of determining microbial biomass carbon and nitrogen.

***Int. J. Biol. Biotech.*, 1(3): 267-270, 22004.**

COMPARISON OF SOME *DRACOCEPHALUM* SPECIES BY PHYLOGENETIC AND CHEMOTAXONOMIC ANALYSIS

S. Saeidnia¹, A. R. Gohari¹, M. Ito² and G. Honda²

¹Department of Pharmacognosy, Faculty of Pharmacy, Medical Sciences University of Mazandaran, Sari, Iran.

E-Mail: Soodabehsaeidnia@Hotmail.Com

²Department of Pharmacognosy, Graduate School of Pharmaceutical Sciences, Kyoto University, 46-29 Yushida, Kyoto 606-01, Japan

ABSTRACT

In this study, the phylogenetic relationship between some *Dracocephalum* species were investigated by Randomly Amplified Polymorphic DNA (RAPD) analysis, with total extracted DNAs. By thirty of 40 primers, polymorphic bands were observed. Genetic distances were calculated in order to construct phylogenetic dendrograms of closely related samples. Gas chromatography analysis supported the taxonomical classification. Based on the results the genetic distance between two samples of *D. kotschyi* was considered to be short and their RAPD banding patterns were quite similar to each other also there is a close relationship between two samples of *D. arguense*. Iranian samples of *D. subcapitatum* and *D. kotschyi* consist of limonene- 10- al which could not be detected in Japanese samples of *D. arguense* so *D. subcapitatum* has very close relationship to *D. kotschyi* rather than *D. arguense*.

***Int. J. Biol. Biotech.*, 1(3): 271-274, 22004.**

ESTIMATION OF HETEROSIS AND HETEROBELTIOSIS IN F1 HYBRIDS OF COTTON (GOSSYPIUM HIRSUTUM L.)

M.M. Kandhro, H. M. Ahmed, S. Laghari, S. Abbassi and S. Abro

*Nuclear Institute of Agriculture (NIA), Tando Jam 70060, Sindh, Pakistan,
E.mail genetics@nia.org.com*

ABSTRACT

Hybrid vigour was estimation by using 9 hybrid combinations grown under field conditions during 2001-2003 at experimental farm of Nuclear Institute of Agriculture, Tando Jam. The hybrids were produced by crossing six genotypes in line by testers method with three lines and testers each. Several of the crosses showed considerable hybrid vigour when compared with mid and better parents. Crosses of Chandi-95 x NIAB-98, Chandi-95 x NIAB-801, NIA-76 x NIAB-98 and NIA-76 x LRA-5166 gave greater hybrid vigour over mid parents (heterosis) for yield contributing traits. The hybrid (Sohni x NIAB-98) manifested highly significant and greater heterosis for bolls per plant (8.33**) and seed cotton yield (7.53***) than the rests; while, the crosses Chandi-95 x NIAB-801 and NIA-76 x NIAB-98 also showed highly significant hybrid vigour for bolls (7.17** & 7.16**) and seed cotton yield (5.53** & 5.56**) per plant respectively. Generally the crosses of parents Chandi-95 and NIA-76 exhibited high hybrid vigour for yield and yield contributing traits.

***Int. J. Biol. Biotech.*, 1(3): 275-278, 22004.**

ALLELOPATHIC POTENTIAL OF SOME MULTIPURPOSE TREE SPECIES (MPTS) ON WHEAT AND SOME OF ITS ASSOCIATED WEEDS

M. A. Khan, K. B. Marwat and G. Hassan

Department of Weed Science, NWFP Agricultural University Peshawar 25130, Pakistan
E-mail: ahmadzaipk@yahoo.com

ABSTRACT

Allelopathic potential of aqueous extracts of leaves of *Prosopis juliflora* and *Eucalyptus camaldulensis* and bark of *Acacia nilotica* @ 0, 150, 100 and 50 g L⁻¹ were conducted in *in vitro*. The dry plant materials were ground and soaked for 24 hours in water. Ten seeds each of *Triticum aestivum*, *Avena fatua*, and *Carthamus oxycantha* were used as test species. The data were recorded on germination percentage, seedling length (mm) and biomass (mg) plant⁻¹. There were two identical runs of the experiment. The inhibition was recorded in all the species tested for all the parameters studied, but it was most pronounced in the germination percentage. *Carthamus oxycantha* was the most inhibited species. Wheat was the most tolerant. Only 20% seeds as compared to the respective check germinated in this species when exposed to *E. camaldulensis* @ 150 g L⁻¹. All other

concentrations of *P. juliflora* and *E. camaldulensis* proved severely inhibitory to germination of *C. oxycantha*. For other parameters the inhibition was observed at the higher concentrations of *P. juliflora* and *E. camaldulensis*. *Acacia nilotica* emerged as the weakest species in inhibiting the growth parameters of the tested species.

***Int. J. Biol. Biotech.*, 1(3): 279-291, 22004.**

FECUNDITY AND FACTORS REGULATING GERMINATION OF *VERNONIA CINERASCENS* AND *V. CINEREA*.

S. S. Shaukat¹, I.A. Siddiqui², Z. Ali³ and S. Sikander⁴

¹ *Department of Botany, University of Karachi, Karachi-75270, Pakistan*

² *Rothamsted Research Station, Harpenden, Herts., U.K*

³ *Department of Botany, Federal Urdu University, University Road, Karachi, Pakistan*

⁴ *Pakistan Scientific and Technical Information Centre, P.O. Box1217, Islamabad*

ABSTRACT

Fecundity of *Vernonia cinerascens* and *V. cinerea* was dependent upon a number of reproductive characteristics and was, in general, greater in *V. cinerascens* compared to *V. cinerea*. The influence of various factors, including intrinsic factors and extrinsic factors, on germination of the two *Vernonia* spp. was investigated. The rate and final germination percentage of both the species was greater in light compared to dark. Greater stimulatory effect of light was observed for *V. cinerea*. The most suitable constant temperature for both the species was 30°C while among the alternating temperature regimes tested highest germination percentage was recorded at 30/25°C day (14h)/night. Increasing moisture stress and salinity provided unsuitable conditions for germination of *Vernonia* species. Redrying moistened achenes delayed germination but the final germination percentage remained unaffected. Germination as well as hydration of achenes of both the *Vernonia* species were higher when the dispersal unit was placed with achene-proper touching the water supplying substrate than when it was placed vertically with pappus facing downwards thereby lifting the achene-proper away from the substrate. Removal of pappus resulted in marked decrease in the rate as well as the final germination percentage. The rate of hydration of achenes was remarkably higher in seeds with pappus than those where pappus was detached suggesting that pappus plays a significant role in water absorption in addition to its role in the protection of ovary and seed dispersal.

***Int. J. Biol. Biotech.*, 1(3): 293-300, 22004.**

IN SITU STUDIES ON THE PLANTS EXPOSED TO INDUSTRIAL AND AGRICULTURAL POLLUTION IN THE VICINITY OF KARACHI I: EFFECTS ON MEIOSIS

S. Rahimi and S. Khatoon

Department of Botany, University of Karachi, Karachi-75270, Pakistan.

ABSTRACT

Thirty specimens of 14 species belonging to 11 families in and around Karachi were collected. These localities included agricultural and industrial polluted sites. The same species were also collected from unpolluted localities serving as controls. The specimens were studied for their meiotic behavior, meiotic product and pollen fertility. The percentage of meiotic abnormalities in the specimens from polluted localities was significantly higher as compared to the controls. The difference was found to be significant (p at the most 0.05). The specimens from polluted localities showed a greater tendency to produce diads as compared to controls. However, with respect to pollen fertility substantial differences were not observed.

Int. J. Biol. Biotech., 1(3): 301-304, 22004.

A QUALITATIVE STUDY OF NODULATED TREE LEGUMES GROWING AROUND THE KARACHI UNIVERSITY CAMPUS

R. Qadri and T. Zehra

Department of Botany, University of Karachi, Karachi-75270, Pakistan

ABSTRACT

Nodulation status of 15 leguminous species within 14 genera was examined. Of the 15 species only 4 were found non-nodulators. Cassia fistula (L). of Caesalpinioideae and Adenanthera pavonina (L) of Mimosoideae have been reported as nodulators for the first time from Pakistan whereas Bauhinia purpurea (L), Delonix regia (Bojer) Rafin, Peltophorum petrocarpum (DC) Backer ex. K. Heyne and Tamarindus indica L are being reported as non- nodulator. The rhizobia from Cassia fistula L and A. pavonina L were found alkali producing. Nodule colour, shape and frequency, and cross nodulating properties of rhizobial isolates from Cassia fistula L and A. pavonina L. in Vigna radiata were also described.

Int. J. Biol. Biotech., 1(3): 305-312, 22004.

USE OF PLANT GROWTH REGULATORS (PGRS) IN ENHANCING CROP PRODUCTIVITY II. EFFECT OF CAC₂ AS A SOURCE OF ETHYLENE ON NUTRIENT UPTAKE BY WHEAT (*TRITICUM AESTIVUM* L)

Z. Ahmad¹, F. Azam², T. Mahmood¹, M. Arshad¹ and S. Nadeem²

¹*Institute of Soil and Environmental Sciences, University of Agriculture, Faisalabad*

²*Nuclear Institute for Agriculture and Biology (NIAB), Jhang Road, P.O. Box 128, Faisalabad.*

E-mail: uaf1409@yahoo.com

ABSTRACT

A pot experiment was conducted in the greenhouse to evaluate the effect of calcium carbide (a source of acetylene that is precursor of ethylene) on nutrient uptake of wheat (*Triticum aestivum* L). Inqalab-91 variety of wheat was sown in pots (12 kg soil pot⁻¹) at field capacity moisture and without or with half (60-45-30 kg ha⁻¹) or full (120-90-60 kg ha⁻¹) dose of N, P and K fertilizer. Half dose of N and full dose of P and K was applied at sowing while remaining half with first irrigation. Calcium carbide as a source of ethylene was applied in amounts equivalent to 60 kg ha⁻¹ after one week and eight weeks of germination. A factorial completely randomized design was followed with nine treatments and three repeats. Data regarding uptake of N, P and K was recorded. N, P and K uptake by wheat grain and straw was influenced significantly when CaC₂ was applied after one week of germination. So the best time of CaC₂ application is after one week of germination.

***Int. J. Biol. Biotech.*, 1(3): 313-317, 22004.**

KINETICS OF ACETYLSALICYLIC ACID IN MALE VOLUNTEERS AFTER ORAL ADMINISTRATION

M. Aamir¹, Amanullah², A. Jabbar², A. A. Chattha², N. Tahir¹, H. Mahmood¹, T. M. Babar¹ and H. N. Bhatti¹

¹*Department of Chemistry, University of Agriculture, Faisalabad, Pakistan.*

²*Department of Chemistry, G C University, Faisalabad, Pakistan.*

ABSTRACT

The kinetics of acetylsalicylic acid, a non-steroidal anti-inflammatory agents, was studied in twelve healthy young males after oral administration of 600 mg aspirin. Blood samples were collected at pre-determined time intervals. The concentration of aspirin as free salicylic acid was analyzed colorimetrically at 530 nm and mean \pm SE value in blood was found to be $26.64 \pm 0.63 \mu\text{g mL}^{-1}$. Individual pharmacokinetic parameters were estimated by using two compartment open model. Mean \pm SE values were found to be C_{max} $39.40 \pm 0.30 \text{ mg L}^{-1}$, T_{max} $1.92 \pm 0.05 \text{ h}$, $t_{1/2\mu}$ $0.97 \pm 0.11 \text{ h}$, K_a $0.80 \pm 0.08 \text{ h}^{-1}$, AUC $239.47 \pm 4.23 \text{ h.mg L}^{-1}$, V_d $12.96 \pm 1.06 \text{ L}$, $t_{1/2\mu}$ $4.85 \pm 0.69 \text{ h}$ and TBC $1.95 \pm 0.08 \text{ L h}^{-1}$. ASA values established in this study were in agreement with those reported by other authors.

***Int. J. Biol. Biotech.*, 1(3): 319-323, 22004.**

KINETICS OF STABILITY OF FUNGAL CARBOXYMETHYLCELLULASES TO PROTEOLYTIC NICKING

A. Jabbar^{1,2}, M.Y. Ghafoor², M. Saleem², Amanullah¹, M.A. Malana³, M. Niaz^{1,4} and M.H. Rashid*².

¹*Department of Chemistry GC University Faisalabad, Pakistan*

²Enzyme Engineering Group, National Institute for Biotechnology and Genetic Engineering (NIBGE), PO Box 577, Faisalabad, Pakistan,

³Department of Chemistry, Bahauddin Zakariya University, Multan, Pakistan

⁴Department of Botany GC University Faisalabad

ABSTRACT

Cellulases are widely used in various industrial processes like: textile, paper and pulp, detergents, etc. Biotechnologists are always in search of new microbes and technologies to improve the kinetic properties of these enzymes. *Arachniotus citrinus* is a novel fungal strain because there is hardly any report on its cellulase system. Here, we report about the effect of proteases on the stability of CMCases produced under solid state growth conditions by *Arachniotus citrinus*. The stability of CMCases was checked against chymotrypsin and subtilisin and it was found that they were very resistant against chymotrypsin attack. While, subtilisin nicked CMCases showed a gradual decreasing trend of CMCase activity. The first order plots for the stability of CMCases against chymotrypsin and subtilisin were linear. The half lives of CMCases against chymotrypsin and subtilisin were 256 and 165 min, respectively. We concluded upon comparison with existing data that the CMCases of *Arachniotus citrinus* were resistant to proteolytic degradation.

Int. J. Biol. Biotech., 1(3): 325-333, 22004.

MICROBIOLOGICAL MEANS OF DETOXIFICATION OF HAZARDOUS WASTE FROM AN ANTIBIOTIC PRODUCING PHARMACEUTICAL INDUSTRY

S. Yousaf¹ and Z. M. Khalid²

¹PPD, NIAB, P.O. Box 128, Faisalabad,

²Environmental Biotechnology Division, NIBGE, P.O. Box 577, Faisalabad, Pakistan,

E-mail: niabmail@niab.org.pk

ABSTRACT

Microbes and microbial system were developed for effective treatment of the effluents from ampicillin/amoxycillin plant in Lahore. Effluent samples were analysed for various pollutant parameters and mutagenicity/toxicity. Bacterial strain capable of growing on these effluents was isolated by enrichment technique. Nutrients requirement were optimized for growth conditions. These enriched cultures were applied for detoxification/biodegradation of effluents. Reduction (95%) in chemical oxygen demand (COD) and in biochemical oxygen demand (BOD₅) was observed in shake flask experiment within 6 days. Up scaling to fermenter level run in batch and continuous growth were also studied.

Int. J. Biol. Biotech., 1(3): 335-342, 22004.

PHYCOCHEMISTRY AND BIOACTIVITY OF ZYGNEMA (ZYGNE-MOPHYCEAE) FROM SINDH

B. Ghazala¹, M. Shameel¹, M. I. Choudhary², S. Shahzad¹ and S. M. Leghari³

¹*Department of Botany, University of Karachi, Karachi-75270, Pakistan.*

²*HEJ Research Institute of Chemistry, University of Karachi, Karachi-75270.*

³*Department of Freshwater Biology & Fisheries, University of Sindh, Jamshoro-76080.*

ABSTRACT

Three filamentous green algae viz. *Zygnema czurdae* Randhawa, *Z. stellinum* (Vaucher) C. A. Agardh and *Z. tenue* Kützing were collected from various freshwater bodies of Sindh during January to December 1995. Their methanol extracts revealed the presence of a variety of saturated and unsaturated fatty acids (FAs) by GC-MS and β -sitosterol by EI-MS & ¹H-NMR. In *Z. czurdae* one saturated, three monounsaturated and one triunsaturated FAs were detected, in *Z. stellinum* five saturated and four monounsaturated FAs were found, and *Z. tenue* contained five saturated, five monounsaturated and one triunsaturated FAs. Palmitic (C16:0) and oleic (C18:1) acids were most commonly present in appreciable quantities (2.57-16.95 & 1.23-6.48 %) in them. Their methanol extracts showed no antibacterial activity but a strong antifungal activity against six of the ten (by agar well diffusion method) and six of the seven tested (by food poisoning method) fungal pathogens. They displayed no bioactivity in brine shrimp bioassay and insecticidal tests. However, they exhibited specific differences among themselves.

Int. J. Biol. Biotech., 1(3): 343-350, 22004.

PHYCOCHEMISTRY AND BIOACTIVITY OF TWO MICROALGAE (VOLVOCOPHYTA) FROM SINDH

B. Ghazala¹, M. Shameel¹, M. I. Choudhary², S. Shahzad¹ and S. M. Leghari³

¹*Department of Botany, University of Karachi, Karachi-75270, Pakistan.*

²*HEJ Research Institute of Chemistry, University of Karachi, Karachi-75270.*

³*Department of Freshwater Biology & Fisheries, University of Sindh, Jamshoro-76080.*

ABSTRACT

Two green microalgae, *Chlorococcum humicolum* (Nägeli) Rabenhorst and *Hydrodictyon reticulatum* (Linnaeus) Lagerheim were collected from various freshwater bodies of Sindh during September to November 1998. Their methanol extracts showed the presence of a variety of saturated and unsaturated fatty acids (FAs) by GC-MS, β -sitosterol and *trans*-phytol by EI-MS & ¹H-NMR. In *C. humicolum* 5 saturated, 4 mono-, 2 tri- and 1 poly-unsaturated FAs were detected and in *H. reticulatum* 6 saturated, 7 mono-, 4 di- and 3 tri-unsaturated FAs were found, while 5 FAs remained unidentified. Trimethyl dodecatrienoic (C15:3) and pentadecylic (C15:0) acids were most commonly present in

highest quantities (14.42-29.38 & 12.35-22.86 %) in them. Their methanol extracts exhibited no antibacterial but a strong antifungal activity against six of the ten (by agar well diffusion method) and six of the seven tested (by food poisoning method) fungal pathogens. They displayed no bioactivity in brine shrimp bioassay and insecticidal tests. They revealed specific differences among themselves, although they belong to the same order.

***Int. J. Biol. Biotech.*, 1(3): 351-353, 22004.**

SCREENING OF CHICKPEA (*CICER ARIETINUM* L.) LINES FOR BLIGHT AND WILT RESISTANCE

S. S. Alam, M. Hassan , T. M. Shah, B.M. Atta and M. A. Haq

Mutation Breeding Division, Nuclear Institute for Agriculture and Biology, P.O.Box 128, Faisalabad, Pakistan.

E-mail: drssalam@yahoo.com

ABSTRACT

Eighty-six advanced chickpea mutant lines were screened against blight under simulated conditions and for wilt disease under field conditions, where the field was highly infested with *Fusarium oxysporum* f.sp *ciceris*. These lines were selected on the basis of resistance to wilt during last few years. Sixty-five lines proved resistant (0, rating) to wilt, 15 lines showed up to 6% wilting and only 9 lines having 15-65% wilt incidence.

Due to rainy days between mid February to early March, the field conditions were very favorable for blight disease. Only 3 lines (950035, CM 1441/98 and CM 1223/98) were found resistant to blight, 6 lines (P1-1/92, CMC 149S, 950248, 950072, Flip 90-144C and Flip 95-157-C) were tolerant, nine lines were moderately susceptible and rest 61 lines were susceptible to highly susceptible. All the blight resistant/tolerant lines were also resistant to wilt disease. Resistant lines identified under such conditions reflect that better sources are available in the breeding programme at NIAB.

***Int. J. Biol. Biotech.*, 1(3): 355-363, 22004.**

EXPLORATION OF BIOACTIVE METABOLITES FROM SAPROPHYTIC BACTERIAL AND FUNGAL ISOLATES OF SOIL ORIGIN

T. Yasmin², J. A. Khan¹, S. Mehboob², M. Akhtar², A. Noreen², S. Nadeem¹, S. S. Alam¹, M. S. Abbasi³ and I. A. Khan¹

¹NIAB. P.O BOX 128, Faisalabad, Pakistan, ²Government College, Faisalabad, Pakistan,

³Islamia University Bhawalpur, Pakistan.

ABSTRACT

Various bacterial and fungal soil inhabitants were tested for the production of antifungal, antibacterial and insecticidal compounds. The bacterial isolate (B₁) showed highest

antibacterial activity against *Staphylococcus aureus* and test bacteria. The fungal assay revealed that the isolate F₁ (*Trichoderma harzianum*) was the most potent of all the isolates in controlling the growth of test fungus (*Cladosporium coccumerinum*). The ethyl acetate extracts of isolates F₂ and B₂ showed maximum activity (90% and 80% mortality) against *Tribolium castaneum* respectively. While highest activity against pulse beetle *Callosobruchus analis* were exhibited by the isolates B₁ that showed 70% mortality. The isolates B₂ and F₁ exhibited 60% mortality each against *C. analis*. The bioautography of the ethyl acetate extracts on TLC plates against *C. coccumerinum* revealed that the isolates B₁ and F₁ produced two antifungal bands each. Two antifungal compounds (B_{1,1} and B_{1,2}) were purified from culture filtrates of bacterial isolate B₁ at Rf values 0.645 and 0.848, when chloroform: methanol (96:4) solvent system was used to develop the TLC plates. Cytotoxicity assay against brine shrimp larvae revealed that ethyl acetate extract of all the isolates were toxic but those of isolates B₃, F₂, F₃ and purified compound B_{1,2} were highly toxic.

***Int. J. Biol. Biotech.*, 1(3): 365-367, 22004.**

PLANT PARASITIC NEMATODES IN SEED POTATO CROP OF NORTHERN AREAS OF PAKISTAN

M. Q. Khan¹ and A. Hussain²

¹*Federal seed Certification and Registration Department, Karachi*

²*Federal Seed Certification and Registration Department, G-9/4. Islamabad*

Email: fscd@seed.isb.sdnpk.org

ABSTRACT

A total number of 172 soil samples collected from all the five districts of Northern areas viz. Gilgit, Ghizar, Skardu, Ghanche and Diamer revealed the presence of 9 genera and 8 species of plant parasitic nematodes viz., *Aphelenchus avenae*, *Ditylenchus dipsaci*, *Helicotylenchus indicus*, *Heterodera zaeae*, *Psilenchus hilarulus*, *Pratylenchus penetrans*, *Quinisulcius* spp, *Tylenchorhynchus annulatus* and *Tylenchus butteus*.

***Int. J. Biol. Biotech.*, 1(3): 369-372, 22004.**

STUDY THE PREVALENCE PF PREVIOUS HBV INFECTION AMONG THE PATIENTS OF ANTI HCV POSITIVE CHRONIC LIVER DISEASE

F. Imtiaz and S,M, Hasan

ABSTRACT

Hepatitis B virus (HBV) and hepatitis C virus (HCV) both leads to chronic liver disease (CLD). It is observed that patients positive for anti HCV with CLD frequently show markers of previous HBV infection. The aim of present study is to assess the prevalence and clinical association of previous HBV infection in the patients of anti HCV positive, hepatitis B surface antigen (HBsAg) negative with various degree of CLD seen at tertiary

care hospitals. The observations indicate that 84.5% patients showed markers of previous HBV infection. This feature was more frequent ($p=0.01$) among chronic hepatitis patients (47.5%) as compared to 28% of cirrhotic patients. Chronic hepatitis patients with previous positive marker for HBV infection showed worse histological picture as compared to those who were negative for previous HBV infection. The 2% patients showed minimal changes, 47.5% showed chronic hepatitis and 28% were showed cirrhosis pattern on histological findings. Among these patients 169 (84.5%) are those who had both anti HBc and anti HCV positive, showed worse stage of disease and confirmed by histological procedures. Our observations suggested that HCV patients in the presence of previous HBV infection showed worse stage of the disease.

***Int. J. Biol. Biotech.*, 1(3): 373-382, 22004.**

**STUDY ON DEVELOPEMENTAL STAGES OF FAIRY SHRIMP
STREPTOCEPHALUS SIMPLEX GURNEY**

P.A. Siddqui, F. Khan, T.A. Saquib, E. Habib and S. Rao

Department of Zoology University of Karachi, Pakistan

ABSTRACT

The study deals with 14 larval stages of fairy shrimp *Streptocephalus simplex* Gurney. These stages were identified by number of body segments, length and development of thoracic appendages, antenna and antennule.

***Int. J. Biol. Biotech.*, 1(3): 383-390, 22004.**

**CARBIMAZOLE INDUCED HISTOLOGICAL AND HISTOCHEMICAL
ALTERATIONS IN THE ADRENAL CORTEX OF ALBINO RAT**

Soad Hanafy

Zoology Department, Faculty of Science, Aswan, South Valley University, Egypt.

ABSTRACT

This study was conducted to investigate the effect of carbimazole on the histology and histochemistry of rat adrenal cortex. Adult male albino rats were used in the present study. They were divided into 2 groups : Group(1) treated with carbimazole at a dose level of 12 mg /kg body weight in drinking water, 3 days /week for six weeks and Groups (2) served as control . At the end of 6 weeks of treatment animals were sacrificed. The morphometric results showed that carbimazole affected the diameter of the cortex and the thickness of ZF and ZR zones. Histological results revealed that carbimazole induced atrophy of zona fasciculata and zona reticularis, thickness of adrenal capsule and vacuolation of zona glomerulosa. Histochemical results revealed a marked depletion of general carbohydrates in zona glomerulosa and zona fasciculata and lacking in zona reticularis. Total protein contents showed a marked decrease in zona glomerulosa and

zona fasciculata, while the cells of zona reticularis appeared with an increased amount of total proteins. These results indicated that carbimazole affected the adrenal cortex.

Int. J. Biol. Biotech., 1(3): 391-395, 22004.

THE EFFECTS OF DIFFERENT FEED AND WATER WITHDRAWALS ON EDIBLE AND INEDIBLE ORGANS OF BROILERS

S. K. Saylam and B. Turan

Department of Animal Science, Faculty of Agriculture, Ondokuz Mayıs University, 55139 Samsun, Turkey

ABSTRACT

This study was carried out to determine the effect of different feed and water withdrawal times prior to slaughtering on organ weights and their relative ratios. Before slaughtering at the ages of 5, 6 and 7 –w, broiler chicks were divided into 6 treatment groups (8 h feed withdrawal (FW), 8 h FW + 4 h water withdrawal (WW), 12 h FW, 12 h FW + 4 h WW, 16 h FW, 16 h FW +4 h WW) and one control group ad lib not subjected to withdrawals. As parameters, weight of edible (heart, liver, gizzard and abdominal fat) and inedible organ (head, feet, blood, feather and intestine) weights with their relative ratios were determined. Treatments (feed and water deprivations) significantly affected the edible organs heart rate, liver rate and gizzard rate without affecting abdominal fat rate ($P<0.01$). Also, treatments significantly changed the ratios of inedible organs blood, feet rate, feather and intestine ($P<0.01$). Age had significant affect in all edible and inedible organ ratios ($P<0.01$).

Int. J. Biol. Biotech., 1(3): 397-403, 22004.

COMPARISON OF THE EFFECT OF SIMPLE AND SUCCESSED HOMEOPATHIC DILUTIONS ON SYSTOLIC FORCE: A STUDY ON ISOLATED PERFUSED RABBIT'S HEART

A. Erum, M.A. Azeem and S. Arifa.

Neuromuscular Unit, Department of Physiology, University of Karachi, Karachi-75270, Pakistan.

aazeem@physio.ku.edu.pk

ABSTRACT

The Homeopathic concept of potentization on dilution / succussion of a substance is considered mysterious for their normal and reverse effect on tissue. This concept of potentization is observed in the present study with differences in the effect of simple and succussed dilutions on systolic force. For this purpose, both simple and succussed dilutions of Adrenaline were prepared serially, ranging from 10^{-3} to 10^{-36} for testing on

the isolated perfused Rabbit's heart. Langendorff heart assembly was used to perfuse the heart and the systolic force was recorded on Oscillograph through isotonic transducer. Results demonstrated significant difference between SD & SUD at 10^{-3} , 10^{-5} , 10^{-6} , 10^{-7} , 10^{-11} , 10^{-27} & 10^{-36} . Conclusively, this study confirms that there are differences in the effects of SD & SUD. While, potentiation or reverse effect observed than normal has been found in-consistently throughout the range of dilutions used. Thus in-consistency expresses the instability of change in parent drug molecule

Int. J. Biol. Biotech., 1(3): 405-411, 22004.

A COMPARISON OF THE RELAXATION RATE OF GASTROCNEMII: EFFECT OF FASTING IN FROG AND UROMASTIX

Anwar A., M.A. Azeem, A. Erum and A. Sadaf

Neuromuscular Unit, Department of Physiology, University of Karachi, Karachi—75270, Pakistan.

ABSTRACT

Generally, fasting animals show impaired skeletal muscle performance in terms of decreased (Olasunkanmi *et al.*, 2002) or increased (Lynelle *et al.*, 2001) relaxation rate. In order to determine whether this observation mainly depends on the type of animal model, the gastrocnemius muscles of non-fasting and fasting (10 days) Frogs and Uromastix were used to tetanize them with continuous stimuli. Fasting has been found to reduce the relaxation rate of Uromastix gastrocnemii, while in Frogs it is enhanced. However, on continuing the tetanic stimulation the relaxation rate declined gradually in both the Frog and Uromastix. Further, the effect of fasting on the initial decline in relaxation rate on continuous tetanic stimulation has been found to increase after fasting in Frog's gastrocnemii and decrease in Uromastix gastrocnemii. On the basis of obtained results it was concluded that the effect of fasting on skeletal muscle relaxation rate differs in different animals probably depending on their muscles' architecture and physiology.

Int. J. Biol. Biotech., 1(3): 413-422, 22004.

USE OF PASTURE AND ANIMAL SAMPLES AS INDICATORS OF MAGNESIUM STATUS OF SMALL RUMINANTS IN RELATION TO SEASONAL FLUCTUATIONS

Z. I. Khan, A. Hussain, M. Ashraf, E. E. Valeem*¹ and M. Y. Ashraf²

Department of Botany, University of Agriculture, Faisalabad, Pakistan.

¹*Education & Literacy Department, Government of Sindh, Karachi, Pakistan.*

²*Nuclear Institute for Agriculture and Biology (NIAB) Faisalabad, Pakistan.*

ABSTARCT

A study was conducted to determine Mg status of grazing sheep in the natural and improved pastures in semi-arid region of Pakistan. Pasture samples including soil, forage, feed, water, and animal samples including plasma, milk, faeces and urine were taken from three different classes of sheep, fortnightly during two different seasons of the year for analyses. Results indicated that all the samples except forage and plasma, and urine in non-lactating sheep remained unaffected by seasonal fluctuations. Plasma Mg^{2+} in all sheep was found to be marginally deficient in both seasons of the year, but soil and forage Mg^{2+} contents were found to be adequate for the requirements of plants and animals, respectively. Based on this study it was concluded that Mg^{2+} level of plasma was likely to be deficient which may be a factor for limiting livestock production in this region. Supplementation with fortified mixture containing this element in appropriate proportion with high bio-availability would seem adequate to these animals during both seasons of the year to increase the productivity of sheep at that farm.

Int. J. Biol. Biotech., 1(3): 423-428, 22004.

A STUDY OF AN *IN VITRO* CALLUS CULTURE AND REGENERATION SYSTEM FROM LEAF DISC EXPLANTS IN STRAWBERRY (*FRAGARIA ANANASSA*) CV. TANGO

Saifullah Khan¹ and W. Spoor²

¹*International Centre for Chemical Sciences, HEJ Research Institute, University of Karachi, Karachi, Pakistan.*

²*Scottish Agriculture College West Mains Road Edinburgh EH9 3JG.*

ABSTRACT

The potential of an *in vitro* callus culture and regeneration system in strawberry (*Fragaria ananassa*) cv. Tango was evaluated. The effects of different hormonal combinations on leaf disc explants sources required to produce the maximum number of plant in the shortest time. Calli induced from leaf disc explants *in-vitro* grown plants exhibited higher regeneration when compared to those induced from greenhouse grown plants. The effects of the hormones BAP, IBA, NAA, and 2,4-D on callus initiation and regeneration was studied. Various combinations of cytokinin (BAP) and auxins (2, 4-D, NAA, IBA) were tested in preliminary experiments. A concentration of 2.25 mg/l of the cytokinin BAP in combination with the auxins NAA (0.18 mg/l) or IBA (1.0 mg/l) gave the maximum shoot regeneration. Media containing 2, 4-D 1:1 ratio with BAP produced only callus while a higher 2, 4-D:BAP ratio produced substantial number of shoots in greenhouse-grown leaf disc explants only (less than 0.5 per leaf disc). The organogenic potential for shoot production from leaf disc of explants taken from *in vitro* cultures compared to those taken from greenhouse-grown plants was significantly different when grown in the same media. In general, the calli generated from *in vitro* culture leaf explants exhibited higher regeneration frequency than those induced from greenhouse-grown leaf explants.