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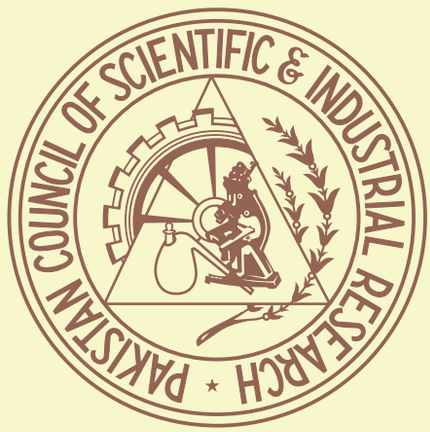

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Short Communication

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Psychophily and Anemochory in *Wendlandia tinctoria* (Roxb.) DC. (Rubiaceae): A Dry Season Blooming Tree Species in the Dry Deciduous Southern Eastern Ghats Forest, Andhra Pradesh, India

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(received August 25, 2010; revised May 16, 2011; accepted May 19, 2011)

Abstract. *Wendlandia tinctoria,* a semi-evergreen hermaphroditic tree species is a massive bloomer for about a month during March-April. The floral characteristics such as white colour of the flower, lack of odour, short-tubed corolla with deep seated hexose-rich nectar having 15-18% sugar concentration conform to psychophily. The nectar is also a source of two essential amino acids, arginine and histidine, and eight non-essential amino acids for butterflies. A variety of butterflies, especially nymphalids visit the flowers for nectar and in doing so, they pollinate them. Other foragers include bees, a fly and wasps. Wasps are occasional nectar foragers and effect pollination. Bees are consistent foragers of pollen and/or nectar. *Apis* bees collect pollen and nectar while *Trigona* and *Ceratina* bees collect only pollen due to the short length of the tongue. The fly is an occasional pollen feeder. The intense pollen collection activity of bees has been considered to be detrimental for the reproductive success of the plant. Therefore, *W. tinctoria* is primarily psychophilous and serves as a key forage source also for other insects at the study site where floral nectar sources are scarce during summer season.

Keywords: *Wendlandia tinctoria*, butterflies, psychophily, bees, wasps, nectar source

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Paddy Yield as Affected by Boron Application Directly Sown on Raised Bed Under Saline Sodic Soils

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(received January 1, 2011; revised July 15, 2011; accepted July 16, 2011)

Abstract. A field experiment was carried out to investigate the effect of different levels of boron (0.5, 1, 1.5 and 2 kg B/ha) on growth, yield and ionic concentration of rice directly sown on raised beds under saline sodic soils (ECe=5.65 dS/m, pH=8.57 and SAR=17.38) at Malik Farm, Farooqabad during 2009. Treatments were arranged using randomized complete block design (RCBD) with three replications. The crop was harvested at maturity and data on tillering, plant height, spike length, number of grains/spike, 1000-grain weight, straw and paddy yields were recorded. Tillering, number of grains/spike, 1000- grain weight and paddy yield significantly ($P \leq 0.05$) increased by different levels of B. 1000 grains weight (29 g) and grain yield was the maximum (4.65 t/ha) at the application of 1.5 kg B/ha and 31% more than control treatment. Maximum plant height (141 cm) and numbers of grains/spike (203) were recorded with B application @ 1 kg/ha, B concentration in grain and straw increased with increasing the rate of boron application. Positive correlation (r = 0.856) was found between B contents in grain and paddy grain yield. Economical analysis showed that maximum value cost ratio (14.9:1) this achieved with the application of 1.5 kg B/ha.

Keywords: rice, B application, salt affected soil

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A Systematic Approach to Develop Level A, *In-vitro* and *In-vivo* Correlation (IVIVC)-Ketoprofen BCS Class II Drug Example

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(received December 18, 2010; revised October 10, 2011; accepted November 1, 2011)

Abstract. Three modified releases; slow release (SR), moderate release (MR) and fast release (FR) matrix tablets of ketoprofen, BCS Class II drug, were manufactured by wet granulation method. The similarity factor (f2) was used to analyze dissolution data. Randomized, three way, crossover bioavailability study of 12 h was conducted on nine (9) healthy volunteers. The *in-vitro* release profile of ketoprofen in phosphate buffer pH 7.5 with SLS (sodium lauryl sulphate 1%) at 100 rpm was found most fit to develop level A IVIVC. A linear correlation (R2 > 0.9) was found in level A, C and multiple C but a non-linear relationship was observed in level B.

Keywords: IVIVC, matrix system, ketoprofen, correlation, similarity factor

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Detection of Aflatoxins in Various Samples of Red Chilli

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(received September 13, 2011; revised December 29, 2011; accepted January 16, 2012)

Abstract. In this study 183 samples of red chilli were screened out for aflatoxin determination, 48 samples were positive for aflatoxins B_1 with the range from 1.2 ppb to 968.3 ppb. Aflatoxin B_2 was detected only in 3 samples with the range of 0.3 ppb to 159.8 ppb. Aflatoxin G_1 and G_2 were absent in all chilli samples.

Keywords: aflatoxin, red chilli, thin layer chromatography

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Spices Mix Induces Biofilm Mode of Growth in *Escherichia coli*

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(received April 15, 2011; revised December 16, 2011; accepted December 23, 2011)

Abstract. The present study describes the effect of composite spices mix on *E. coli*. This strain (*E. coli*) exhibited high level of resistance to spices and was able to grow in the presence of 500 µg/mL of spices mix as supplement in Brain Heart Infusion (BHI) Broth. *In vitro* studies showed that spices mix induces biofilm mode of growth which help bacteria to annul the toxic effects and modify it to grow under stress conditions. Electron Micrographs indicates heterogeneity in biofilms structure, where majority of the cells showed the production of extra cellular matrix material and other just adhere around the multi-cellular aggregate of biofilms without producing extra cellular matrix material under spices stress environment. It is concluded that sub-lethal concentration of spices could be harmful for human health by inducing biofilms mode of growth of food born pathogens.

Keywords: *E. coli*, biofilm, antimicrobial activity, spices

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Studies on Antimicrobial and Antifungal Activities of *Ziziphus mauritiana* Against Human Clinical Bacterial and Fungal Pathogens

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(received April 20, 2011; revised November 3, 2011; accepted March 2, 2012)

Abstract. The antimicrobial and antifungal activities of crude extracts of *Ziziphus mauritiana* leaves were investigated against six selected bacterial (*Staphylococcus aureus*, *Micrococcus luteus*, *Escherichia coli*, *Pseudomonas aeruginosa*, *Enterobacter*, *Klebsiella pneumoniae*) and one fungal pathogen (*Aspergillus niger*). The crude extract was further fractionated in butanol, choloroform, *n*-hexane and methanol. Agar well diffusion and agar dilution assay were employed for determination of zones of inhibition and MICs, respectively, whereas MBC was determined using broth dilution test. The butanol fraction presented encouraging antimicrobial activity (15.0±0.02), while methanol (7.03±0.05) and chloroform (7.0±0.05) fractions emerged with significantly low susceptibility. The *n*-hexane fraction was recorded as almost inactive (0±0) against all bacterial pathogens. Unlike the antibacterial activities, all fractions possessed momentous antifungal activities except the methanol fraction (0±0). The *n*-hexane fraction showed widest zone of inhibition (11±0.05) followed by butanol (8.0±0.02) and chloroform (7.0±0.02).

Keywords: crude extract, antimicrobial activities, traditional medicine, *n*-hexane fraction, *Aspergillus niger*, *Ziziphus mauritiana*

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Anti Irritant Activity of Extract from the Aerial Parts of *Echinops echinatus* Compositae

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(received September 15, 2010; revised May 25, 2011; accepted August 2, 2011)

Abstract. Present study was focused on anti irritant potential of a xerophytic weed, *Echinops echinatus*. For this purpose, petroleum ether, chloroform and methanol extracts of various polarities from the aerial parts of *E. echinatus* were collected. Five fractions i.e., Ee-1 to Ee-5 were isolated from the chloroform extract of powdered plant by column and thin layer chromatography. The anti irritant potential of these fractions were evaluated on rabbit's skin. The anti irritant activity was evaluated from the healing mechanism on the abraded and irritated animal's skin. Two fractions (Ee-2 and Ee-4) appeared to be the potent anti irritant than others.

Keywords: *Echinops echinatus*, anti irritant activity, abraded, animal skin, chromatography

Pak. j. sci. ind. res. Ser. B: biol. sci. 2012 **55** (1) 46-50

Effects of PPR Vaccine on Goat Haematology in Tangail District of Bangladesh

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(received December 28, 2010; revised September 14, 2011; accepted September 25, 2011)

Abstract. The present study was conducted during the period May 26, 2007 to July 2, 2007 to observe the blood parameters of 18 she goats of the same age after vaccination with PPR vaccine after challenge with field virus. The within-subjects test indicated a significant ($P<0.01$) time effect on TEC. The interaction effect of vaccine on TEC over time was significant ($P<0.05$). The between subject effect of vaccine on TLC was significant ($P<0.01$). That is, the mean values of TLC at different doses of vaccine varied significantly. Double dose of vaccine reduced TLC to a significant ($P<0.05$) extent with respect to single dose and single dose boosting after 7 days of vaccination. Hb at the 1st, 2nd, 3rd and 4th observations were computed and the reduction of Hb estimation at each of 7 days duration was significant ($P<0.05$). The within-subjects test showed a significant ($P<0.01$) time effect on Hb of goats. Hb concentration declined cubicly over time. The interaction effect of vaccine on Hb over time was significant ($P<0.01$). The increment of ESR was recorded as significant ($P<0.05$) at 3rd and 4th observations. The within-subjects effects on ESR reveal that time had a significant ($P<0.01$) effect on ESR. The values of ESR changed in a quadratic pattern over time. The test of within-subjects effects showed a significant ($P<0.01$) time effect on the values of PCV of goats. The values of PCV changed in a linear form over time which reveals that the PPR vaccine affected the hematological parameters of the goats at different patterns over time.

Keywords: peste des petits vaccine, goats, heamatology, Bangladesh

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Forensic Entomology: When Puparia of Insect Stages is the Only Link to Cause

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(received October 27, 2010; revised May 27, 2011; accepted August 6, 2011)

Abstract. High performance liquid chromatography (HPLC) was used to conduct an entomotoxicological analysis on puparia cases and adult insects bred from monocrotophos poisoned carrions. The results indicate that, the poison was better detected in puparia cases compared to adults. This is valuable as puparia abundance at carrion in the late stages of decomposition is a common phenomenon compared to maggots and adults. Hence, standard operating procedures for collecting entomological evidence at death scene involving heavily decomposed remains should focus on collecting puparia, as they could be a link to cause of death, especially when foul play by poisoning is suspected.

Keywords: puparia, insect, entomotoxicology, forensic entomology, decomposition

Pak. j. sci. ind. res. Ser. B: biol. sci. 2012 **55** (1) 56-58

Short Communication

Antagonism Among Skin Bacterial Isolates

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(received June 16, 2011; revised January 24, 2012; accepted February 6, 2012)

Abstract. A study on the inhibitory activity or antagonism among skin bacterial isolates was carried out by observing if the isolates inhibited the growth of one another. Five bacterial species were isolated from the 40 swabs of the different part of the skin used in this study. The isolates in order of decreasing frequency of isolation were *Staphylococcus epidermidis* 11(25.00%), *Micrococcus roseus* 11(25.00%), *Bacillus subtilis* 9(20.46%), *Staphylococcus aureus* 8(18.18%) and *Pseudomonas aeruginosa 5*(11.36%). *M. roseus* and *B. subtilis* were strongly inhibited by *S. epidermidis, S. aureus* and *P. aeruginosa. S. aureus* was inhibited by *S. epidermidis.* Furthermore, *M. roseus, S. epidermidis* and *P. aeruginosa* failed to inhibit the growth of each other.

Keywords: antagonism**,** bacteriocin, human skin, bacterial isolates