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Physical Sciences Section

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ON THE VALIDITY OF WEISSKOPF PHASE SHIFT IN THE PRESSURE BROADENING AND SHIFT OF SPECTRAL LINES

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(Received April 3, 1994 ; revised October 17, 1994)

The classical theory of collisional broadening and shift parameter (β, δ) of an isolated spectral line is used to obtain simple analytical formulas for calculating both β and δ. These formulas are obtained on the assumption that the short range interaction is effective only in the broadening while the long range is effective in the shift of the spectral line. The parameters β and δ depend on the Weisskopf phase shift $\eta_0 = 1$. The obtained formulas are applied to both vanderwaals and Lennard - jones model potentials for some atomic pair interactions. The obtained results are in close agreement with the numerical results obtained before. This verify the validity of both of the Weisskopf phase shift and the obtained analytical formulas.

Key words: Pressure broadening, Shift parameter, Spectral line.

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CONDENSATION REACTIONS OF 1, 3-DIPHENYL-2-PROPEN-1-ONES WITH NUCLEOPHILIC REAGENTS

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(Received May 4, 1994 ; revised November 6, 1994)

The reactivity of substituted 1,3-diphenyl-2-propen-1-ones has been investigated under acidic and basic conditions with amino-compounds resulting to heterocyclic derivatives. Other reactions with ethyl acetoacetate and acetylacetone have afforded substituted 3,5-disphenylcyclohexenones.

Key words: Condensation of 1,3-propenones, Amino and β-Ketonic Compounds.

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SYNTHESIS AND REACTIONS OF 2-AMINO-4 (SUBSTITUTED PHENYL)-5, 6, 7, 8-TETRABROMO-1 (2H)-PHTHALAZINONE DERIVATIVES

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(Received May 5, 1993 ; revised December 22, 1994)

2-Amino-4 (substituted phenyl)-5, 6, 7, 8-tetrabromo-1 (2H)-phthalazinones 3 a-c have been prepared via the interaction of the benzoxazones 2 a-c with hydrazine hydrate in boiling pyridine. The reaction of 3 a with carbon disulphide and hydrazine hydrate in the presence of liquid ammonia gave 2-thiosemicarbazide phthalazinone derivative 4. Also the reaction of 3 a with each of phenylisothiocyanate, chloroacetyl chloride and α-chloroacetanilide gave the corresponding N-Phenyl aminocarbothiamido, α-chloroacetamido and N-phenyl carbonylmethylamino phthalazinones 6, 9, 11, respectively. The biological activity of some compounds has been described.

Key words: 2-Amino-4 (substituted phenyl)-5, 6,7,8-tetrabromo-1(2H)-Phthalazinones 3a-c.

Biological Sciences Section

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A REVISION OF THE GENUS *TOLUMNIA* STÅL (PENTATOMIDAE: PENTATOMINAE: CARPOCORINI) FROM THE INDO-PAKISTAN SUB-CONTINENT

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(Received October 2, 1991 ; revised July 29, 1993)

The genus *Tolumnia* Stål from the Indo-Pakistan subcontinent is revised. Five species are keyed and described with special reference to their metathoracic scent gland complex, male and female genitalia and their relationships within the tribe Carpocorini Stål is also briefly discussed.

Key words: Genus *Tolumnia* Stål, Revision, Indo-Pakistan Sub-continent.

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SUPPLEMENTATION OF RICE STRAW WITH VARIOUS NITROGEN SOURCES TO IMPROVE THE YIELD OF *PLEUROTUS SAJOR*-CAJU

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(Received March 7, 1993 ; revised August 7, 1994)

Pleurotus sajor-caju was cultivated on rice straw. Supplementation of rice straw with different pulse (2% w/w), inorganic and organic sources (0.92% Nitrogen level) increased the yield from 72.3 to 83.5% maximum being on addition of 'Lobia' *(Vigna cajang)* followed by corn gluten meal (79.7%). Supplementation of rice straw with gram, black gram, red gram and french beans showed almost non-significant stimulatory effect whereas ammonium sulphate, ammonium nitrate, urea and mustard seed meal retard the growth of *P. sajor*-caju.

Key words: *Pleurotus,* Yield, Nitrogen sources, Fructification.

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CHEMICAL EVALUATION OF THE GENUS *ACACIA* OF PAKISTAN
Part-V. Composition of Lipid Classes of *Acacia cyanophylla* Lindl., *Acacia tortilis* Hayne and *Acacia victoriae* Benth

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(Received May 22, 1993 ; revised August 15, 1994)

Seed lipids of *Acacia cyanophylla* Lindl. (9.8%), *A. tortilis* Hayne (6.0%) and *A. victoriae* Benth. (5.3%) were examined for lipid classes and their fatty acid compositions. All the seed lipids were found to be rich in neutral lipids (64.1- 72.8%). Triglycerides constituted 75.4, 41.8 and 75.7% of the neutral lipids of *Acacia cyanophylla, A. tortilis and A. victoriae* respectively. The GC studies showed the presence of lauric (1.9, 0.0, 2.5%), myristic (2.8, 0.0, 1.2%), palmitic (22.1, 16.5, 18.3%), palmitoleic (3.6, 0.0, 2.5%), stearic (5.5, 8.2, 8.7%), oleic (30.4, 37.0, 36.5%), linoleic (29.1, 32.9, 20.5%), linolenic (2.8, 2.3, 4.8%, arachidic (0.8, 1.0, 0.9%) and behenic acids (1.0, 2.1, 4.1%) in total lipids of *A. cyanophylla, A. tortilis* and *A. victoriae* respectively. The presence of lignoceric acid was also observed in the seed lipids of *A. cyanophylla.*

Key words: *Leguminosae*, Genus *Acacia,* Lipid Composition.

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BENEFICIAL EFFECTS OF *ALLIUM SATIVUM* LINN IN EXPERIMENTAL CHOLESTEROL ATHEROSCLEROSIS IN CHICKEN

Part - I. Protective Effects

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(Received December 1, 1992 ; revised August 18, 1994)

Beneficial effects of garlic have been established in a chicken model by biochemical as well as anatomical evidence. Garlic was fed to chickens simultaneously with cholesterol to investigate its protective effects on induction of experimental atherosclerosis. The results have shown that garlic administration leads to a significant decrease in the level of triglycerides, total cholesterol and LDL (+VLDL)-cholesterol in the plasma of chickens fed on cholesterol-enriched feed. These biochemical findings correlate well with the assessment of aortic damage observed in these animals after sacrifice at the end of 12 weeks' study period. The damage being significantly lower as compared to that found in the animals not given garlic. Possible mechanisms by which garlic could exerts its beneficial effects are discussed.

Key words: *Allium sativum*, Hypolipidemia, Chicken.

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STABILITY ANALYSIS FOR COMPARING COTTON VARIETIES (*GOSSYPIUM HIRSUTUM* L.)

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(Received January 3, 1994 ; revised October 24, 1994)

Four cotton (*Gossypium hirsutum*) varieties were compared for their stability of performance in 18 environments for seedcotton yield, percentage of ginning outturn and staple length. Regression coefficients (b), deviations from regression (S^2-d) and coefficients of variation (CV) were stability parameters considered in this investigation. Variety x environment interaction was significant which allowed further partitioning into environment linear and variety x environment linear. Environment linear and variety x environment linear were also significant, suggesting genetic differences among cultivars for their response to different environments. For yield and percentage of ginning outturn, variety CRIS-9 was stable indicating greater potential to perform better in a range of environments.

Key words: Stability parameters, Genotypes by environment interaction, Cotton.

Technology Section

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PRODUCTION OF OXYTETRACYCLINE BY DIFFERENT MUTANTS OF *STREPTOMYCES RIMOSUS* INDUCED BY PHYSICAL MUTAGENS IN A DATE MEDIUM

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(Received April 29, 1993; revised January 1, 1994)

Sixty seven mutants produced by different physical mutagens were surveyed for antibiotic formation. One mutant out of 18 UV-mutants produced higher antibiotic titres than the initial organism, while in case of the 49 x-rays mutants, none of the mutants produced antibiotic yield more than the parent organism. UV irradiation gave the highest total auxotrophic mutants percentage.

Key words: UV, X-ray, Mutagens-oxytetracycline

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A MULTI-RESIDUE METHOD FOR QUANTITATION OF ORGANOCHLORINE, ORGANOPHOSPHORUS AND SYNTHETIC PYRETHROID PESTICIDES IN COTTON SEEDS

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(Received September 25, 1993; revised August 16, 1994)

Analytical procedures have been developed for extraction, cleanup, identification and quantification of multiple residues of organochlorine, organophosphorus and synthetic pyrethroid pesticides in cotton seeds, collected from cotton growing areas of Punjab and Sindh provinces of Pakistan. These methods are efficient and reliable and allowed lipid removal to a large extent.

Key words: Multiple pesticide residues, Gas chromatography, Cottonseeds.

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EFFECT OF NaCl ON THE GERMINATION, SEEDLING AND SOME METABOLIC CHANGES IN SWEET BASIL (*OCIMUM BASILICUM*)

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(Received February 8, 1993 ; revised December 13, 1994)

The effect of different salinity levels (up to 120 mM NaCl) on germination, Seedling growth, dry matter and some related metabolic parameters of sweet basil (*Ocimum basilicum*) was studied. During germination it tolerated salinity up to 60 mM NaCl. However, seedling growth and dry matter production were decreased by NaCl greater than 40 mM NaCl. Soluble carbohydrate and proline concentration of seedling increased with increase of salinity. However, soluble protein and amino acids were decreased by salinity. In long term (36 days) experiment, growth decreased with increasing salinity levels, except at 5 and 10 mM NaCl where growth was increased. Water content in the whole test plant increased at 5 mM NaCl and decreased as salinity increased to 50 mM NaCl. These results may lead to the conclusion that, sweet basil is a medium tolerant crop and is considered as glycophyte.

Key words: *Ocimum basilicum*, Salinity, Germination, Growth.

Short Comm

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Lipid Metabolism in Seeds of *Citrullus Vulgaris* During Germination

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Studies have been carried out on *Citrullus vulgaris* Schrad.

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Screening of Various Raw Food Commodities for Aflatoxin Contamination. *Part-II*

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