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TRAFFIC NOISE IN KARACHI. *Part-II.*

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(Received January 23, 1995; revised January 26, 1997)

In order to make a detailed assessment of the prevailing traffic noise in the Karachi city, this survey was conducted and traffic noise data was collected at 20 different sites, continuously for 12 hrs. at each site. The collected data has been analyzed for average background (L_{90}), average (L_{50}) and average peak (L_{10}) values and results are discussed with reference to some international criteria for community annoyance and existing legislation thereon in Pakistan.

Key words: Traffic noise, Noise pollution, Environmental pollution.

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COPPER(I) COMPLEXES OF TRIPHENYLPHOSPHINE AND 2-METHYLPYRIDINE

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(Received August 30, 1993; revised January 27, 1997)

Copper (I) complexes with triphenylphosphine and α -picoline have been prepared. The variation in stoichiometry and the probable structures of these complexes have been discussed on the basis of their chemical and spectral data; these complexes have been suggested to have dimeric structure and the experimental data are in support of the bridging of halides, nitrate or thiocyanate groups between the two copper atoms.

Key words: Copper Complexes, Triphenylphosphine, Methylpyridine.

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MASS SPECTRAL STUDIES ON SOME NITROBENZYLIDENE THIOACETAL DERIVATIVES

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(Received June 30, 1996; revised January 30, 1997)

The electron impact mass spectral studies on some nitrobenzylidene thioacetal derivatives showed two different mechanisms of oxygen transfer from the nitro group to the sulfur containing fragments via intra- and inter-oxygen transfer. The two mechanisms are mainly dependent on the position of the nitro group. The relative intensity of the sulfoxonium ion formed via an intra-mechanism is always higher than formed by an inter-oxygen transfer mechanism. The oxygen transfer processes were totally eliminated when a free carboxylic group was introduced in the β -position to the sulfur atom which facilitates hydrogen transfer from the carboxylic group to the sulfur atom, giving rise to the base peak in their mass spectra as the thioglycolic acid fragment ion rather than the sulfoxonium fragment ion. The presence of two nitro groups, substituted at 2- and 4-positions of the benzylidene nucleus neither increased the relative intensity of the sulfoxonium ion nor competed with the hydrogen transfer mechanism. Conversion of the carboxylic acid into the methyl ester, however, decreased the hydrogen transfer process.

Key words: Nitrobenzylidene thioacetal derivatives, Electron impact mass spectra, Oxygen transfer mechanism.

SYNTHESIS AND CHARACTERIZATION OF MIXED LIGAND COMPLEXES OF TITANIUM (III) AND OXOVANADIUM (IV) CONTAINING A 14-MEMBERED MACROCYCLE AND ORGANIC MONOBASIC ACIDS

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(Received July 18, 1995; revised February 28, 1997)

A number of novel mixed ligand complexes of titanium (III) and oxovanadium (IV) containing trans-[14]-diene and organic monobasic acids of compositions, trans-[Ti (L')₂ L''] Cl and K[VOL'L''] SO₄ (L' = deprotonated acetic acid, propionic acid, butyric acid and benzoic acid and L'' = trans-[14]-diene) have been isolated and characterized by elemental analyses, conductivity and magnetic measurements, IR and electronic spectral studies. Titanium (III) complexes exhibit 3:1 and oxovanadium (IV) complexes show 2:1 electrolytic behaviour in DMSO as are evident from conductivity measurements. Magnetic measurements, IR and electronic spectral data reveal octahedral stereochemistry for both titanium (III) and oxovanadium (IV) complexes.

Key Words: Mixed ligand complexes, Titanium (III), Oxovanadium (IV).

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COMPARATIVE STUDIES OF METALS IN FISH ORGANS, SEDIMENT AND WATER FROM NIGERIAN FRESH WATER FISH PONDS

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(Received May 10, 1996; revised April 5, 1997)

Fish samples (*Illisha africana*) were collected from six man-made fish pond in Edo and Ondo States, Nigeria. Some organs of the fish, sediment and water from the fish habitat were analysed for Cd, Pb, Hg, Ca, Fe, Zn, Cu and Cr. Physico-chemical properties of water samples from the ponds were also re-corded. The concentration of the metals varied in the sediment water as well as in different organs of the fish. However, chromium was absent in all the samples. The descending order of metal concentration in fish organs was: gills, intestine, head and muscle. To avoid harmful accumulation of these metals in the human system, the gills and the intestine should preferably be discarded while processing fish for consumption. The head with a relatively high concentration of calcium might be useful in feed formulation.

Key words: Metals. Fish organs, Fish ponds.

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SYNTHESIS OF HETERO-BICYCLIC COMPOUNDS

Part-IX. Formation of 2,2-disubstituted 4,5-dioxo-pyridino [4,3-d] [1,3]dioxins

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Chloropyranodioxins (I) prepared by the reaction of malonyl chloride with mixed ketone were converted into 7-(phenylamino)-pyranodioxins (II) which underwent the phenoxide rearrangement to yield the corresponding pyridinodioxins (III), whose structures were determined by chemical conversions and spectroscopic studies.

Key words: Chloropyranodioxin, Pyridinodioxin, Hetero-bicyclic compounds.

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KINETIC STUDIES ON THIOCYANATE SUBSTITUTION IN DIMERIC HALO SCHIFF BASE CHROMIUM (III) COMPLEXES — A CORRELATION OF RATES AND STRAIN ENERGIES

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(Received June 12, 1995; revised April 22, 1997)

The kinetics and mechanism of thiocyanate substitution in dimeric chromium (III) complexes, $\text{Cr}_2\text{L}_2^{\text{I}}\text{Cl}_2$ and $\text{Cr}_2\text{L}_2^{\text{II}}\text{Cl}_2$ where $\text{L}^{\text{I}} = \text{C}_{18}\text{H}_{19}\text{N}_3\text{O}_2$ (deprotonated Schiff base derived from diethylenetriamine and salicylaldehyde) and $\text{L}^{\text{II}} = \text{C}_{21}\text{H}_{26}\text{N}_4\text{O}_2$ (deprotonated Schiff base derived from N, N Bis (2-aminoethyl) 1, 3 propanediamine and salicylaldehyde) have been studied spectrophotometrically at 20°C in ammonium thiocyanate medium in the concentration range 0.2-1.0 mol dm⁻³. The values of K_{obs} show a nonlinear dependence on square of NCS^- concentration for both the complexes. These have been found to increase with the increase in derived strain energies of the metal - ligand rings in the complexes.

Key words: Kinetic studies, Cr(III) complexes, Thiocyanate substitution.

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GEOCHEMISTRY OF GROUND WATER AND THE SOURCE OF CONTAMINATION OF FLUORIDE IN THE DRINKING WATER OF THE NARANJI AREA, DISTRICT SWABI, NWFP, PAKISTAN

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(Received November 11, 1995 ; revised May 5, 1997)

Inhabitants of the Naranji village are known for their yellow colouration of teeth throughout the Mardan Division. A general survey of the area shows prevalence of dental and skeletal fluorosis of varied degree in the village. A detailed geochemical analysis of ground water of the village indicates fluoride concentration of 13.5 mg L^{-1} which is about 9 times more than WHO's maximum contaminant level. The source of high fluoride in drinking water is considered to be the alkaline rocks of Koga Complex. Tube well water should be supplied to the area in order to avoid the fluoride contamination.

Key Words: Drinking water, Fluoride, Osteoporosis.

NEW PEROXO COMPLEXES OF TH (IV), U(VI), MO(VI) AND W(VI) IONS CONTAINING TRIEN AND 1, 10 PHENANTHROLINE

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(Received April 9, 1996; revised May 19, 1997)

Some novel peroxo complexes of the type $[\text{Th}(\text{O}_2)_2 \text{L}]$, $[\text{U}(\text{O})(\text{O}_2)_2 \text{L}]$ and $[\text{M}(\text{O})(\text{O}_2)_2 \text{L}]$ ($\text{M} = \text{Mo (VI)}$ and W (VI) ; $\text{L} = \text{trien}$ or phenanthroline) have been isolated and characterized by elemental analyses, magnetic measurements and infrared spectral studies and their reactivity has been explored. The experimental data are consistent with octahedral geometry for the thorium complex, nine-fold coordination for the molybdenum and tungsten complexes. None of the complexes oxidised triphenylphosphine or triphenylarsine. The ν_1 (o-o) stretch frequency decreased with increasing metal-ion size.

Key words: Peroxo complexes, Auxiliary ligands, Elemental analysis, Heavy metal ions.

Biological Sciences Section

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ENVIRONMENTAL ADAPTATION ANALYSIS OF SEVERAL UPLAND COTTON VARIETIES

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(Received August 31, 1995; revised February 22, 1997)

Ten Pakistani upland cotton varieties, all *hirsutum* types were collated for their environmental adaptation in three sites over three years for seedcotton yield, lint % and fibre length. Stability parameters considered in this study were, regression coefficient (b), deviations from the regression line (S^2_d), mean over environments and coefficient of variability (CV). In a combined analysis of variance, variety x environment interaction factor was recorded significant for all the traits that allowed further partitioning of this factor into environment linear, variety x environment linear and pooled deviations from the regression. Environment linear and variety x environment linear were also significant for all the traits, connoted genetic differences among the varieties for their response to varying environments. Varieties Sarmast and NIAB-78 were comparatively more stable to variable environments for seedcotton yield, CRIS-9 and NIAB-78 for lint % and Qalandri, Shaheen, CIM-70 and CIM-109 for fibre length due to their means higher than the grand mean, regression coefficients equal or close to unit slope and smaller deviations from the regression line for respective traits. Whereas under specific environments of favourable nature, varieties CRIS-9, Shaheen and CIM-109 would be desirable for seedcotton yield and Shaheen, CIM-70 and MNH-93 for lint % and K-68-9 for fibre length. For less favourable environments, varieties Qalandri, Rehmani and CIM-70 would perform better for yield, Qalandri and K-68-9 for lint % and CRIS-9 for fibre length.

Key words: *G. hirsutum*, Seedcotton yield, Lint%, Fibre length.

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COMBINING ABILITY ESTIMATES OF HIGHLY ADAPTED TESTER LINES CROSSED WITH POLLINATOR INBREDS OF COTTON, *GOSSYPIMUM HIRSUTUM* L.

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(Received June 30, 1996; revised February 23, 1997)

Five high yielding and well adapted hirsutum tester inbreds were crossed with five advanced pollinator strains to study their General Combining Ability (GCA) and Specific Combining Ability (SCA) parameters for number of bolls, boll weight, seed cotton yield, lint% and fibre length. Of the tester lines, CIM-240 formed the highest GCA for number of bolls and seed cotton yield whereas among the pollinator parents, only CRIS-121 was good scoring general combiner for these two traits. Thus GCA results suggested that in a crossing programme, CIM-240 and CRIS-121 can be very useful parents to develop segregating population for selection. Per se hybrid performance for number of bolls and yield was not correlated with SCA with few exceptions. Tester CIM-240 and pollinator CRIS-121 performed relatively better for GCA, SCA and per se hybrid performance which indicated that these parents can better fit either for hybrid development or selection programme. Other characters such as boll weight, lint% and fibre length were less important in present studies because their GCA and SCA values were not so pronounced.

Key words: Combining ability, Tester and pollinator inbreds, Cotton.

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USE OF FILTER CAKE, AS A SUBSTITUTE FOR CEREALS IN POULTRY FEED

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(Received April 27, 1995; revised April 8, 1997)

Filter cake, a by-product of sugar cane industry, was tested for incorporating as a new energy source in poultry feed, in place of cereals. Sun dried filter cake was used progressively at 5, 10 & 15 % for replacing rice and formulating economical and efficient rations. Substitution of filter cake up to 27 % showed no abnormal mortality but the growth (weight gain) was reduced when filter cake was given more than 15 %. The weight gain (% of initial weight) with feed containing 15 % filter cake was 278 % as compared to 258 % by feed containing zero percent filter cake. Feed conversion ratio was also better with feed containing filter cake. The conversion value of feed containing 15 % filter cake was 2.25 compared with value 2.79 of feed without filter cake.

Key words: Poultry feed, Filter cake, Cereal substitute.

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EFFECT OF A PROTEASE INHIBITOR ON ADENYLATE CYCLASE OF *BORDETELLA PERTUSSIS*

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(Received October 25, 1992; revised June 4, 1997)

The heterogeneity of adenylate cyclase (AC) of *Bordetella pertussis* reported in the literature has been revealed by SDS-PAGE and immunoblotting. This signifies that AC might be susceptible to endogenous proteases. The multiplicity of the bands appeared in SDS-PAGE and immunoblotting were found to be reduced when a protease inhibitor, phenyl methyl sulphonyl flouride (PMSF) was used during AC preparation. This study indicates that AC does not exist physiologically as multiple peptides.

Key words: Protease, *Bordetella pertussis*, Adenylate cyclase.

STRUCTURE, DEVELOPMENT AND REPRODUCTION OF A NEW SPECIES *SCINAIA SAIFULLAHII* (BONNEMAISONIALES, RHODOPHYTA) FROM THE NORTH ARABIAN SEA

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(Received April 22, 1996; revised June 25 1997)

Scinaia saifullahii Afaq-Husain *et* Shameel, a new taxon of red algae belonging to the group of cylindrical and unstricted species of *Scinaia*, from the coast of Pakistan has been described. Its vegetative, anatomical and reproductive structures were studied critically. These plants may be distinguished from other species of *Scinaia* by their large size (up to 25 cm), generally large distance between successive furcations (up to 60 mm) and relatively large cystocarps (up to 300 μ m diameter). Size and shape of urticles, hypodermal cells, carposporangia and carpospores together distinguish it from allied species.

Key words: Rhodophyta, Bonnemaisoniales, Galaxauraceae, Pakistan, *Scinaia*.

Technology Section

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PETROGENESIS OF HAZARA DOLOMITES OF NWFP, PAKISTAN AND THEIR INDUSTRIAL USES

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Hazara dolomites are sedimentary rocks of Cambrian age and belong to Sirban formation of Abbottabad Group. These dolomites are formed by the alteration of limestones. There are huge resources of dolomite in the Sirban formation of Abbottabad area. Two textural varieties are found in these dolomites, one is coarse grained and the other is fine grained. Chemical analysis shows that these dolomites have many industrial applications. These are suitable for using as soil neutralizer, in the preparation of dolomite clinker, as an accelerator in the cement industry, in the preparation of chemicals like MgO , $Mg(OH)_2$ and in the steel industry.

Key words: Dolomites, Petrogenesis, Hazara.

Short Communication

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**Bright Greenish Yellow Fluorescence and
Aflatoxins**

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