



ISSN 0030 - 9885

Coden: PSIRAA 33 (9) 359-412 (1990)

PAKISTAN JOURNAL OF SCIENTIFIC AND INDUSTRIAL RESEARCH

Vol. 33, No. 9, September 1990

Physical Sciences. Pages 359-383

Biological Sciences. Pages 384-403

Technology. Pages 404-412

Published monthly by

Scientific Information Centre

PAKISTAN COUNCIL OF SCIENTIFIC AND INDUSTRIAL RESEARCH
KARACHI

Physical Sciences Section

Pak. j. sci. ind. res., vol. 33, no. 9, September 1990

NEW MELIACIN ANALOGUES FROM EPOXYAZADIRADIONE

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(Received August 25, 1990)

Hydrolysis of epoxyazadiradione (1) with ethanolic potash has led to several new analogues with highly oxygenated ring D, possessing potential pharmacological significance. These include three major products 7-deacetoxy, 14-ethoxy, 7,15 β -dihydroxy, 14,15-dihydroazadiradione (2), 7-deacetoxy, 7-hydroxy, 15-ethoxyazadiradione (3) and 7-deacetoxy, 7-hydroxy, 15-ethoxy-epi-azadiradione (4) and two minor compounds, 7-deacetoxy, 7,16-dihydroxy, 15-ethoxy, Δ^{16} -azadirone (7) and 7-deacetoxy, 7,15 β , 16-trihydroxy, 14-ethoxy, 14, 15-dihydro, Δ^{16} -azadirone (8). Their structures have been elucidated through chemical and spectral studies. The present studies which provide a simple route for introducing new moieties e.g. enol ether, di-enolate ether and enol in the meliacin nucleus bear a potential utilization in the synthesis of natural products. Of particular mention, is the substitution of an alkyloxy group at the olefinic carbon of azadiradione, via epoxyazadiradione. The triterpenoids azadiradione (6), hydrolysis products 2 and 3, and epoxyazadiradione (1) were tested for their activity against house flies (*Musca domestica*. L). 6, 2 and 3 showed LD₅₀ 0.85, 8 and 7.8 μ g/fly respectively, whereas 1 was ineffective on these concentrations.

Key words : New meliacin derivatives; 7-deacetoxy, 14-ethoxy, 7,15 β -dihydroxy, 14,15-dihydroazadiradione; 7-deacetoxy, 7-hydroxy, 15-ethoxyazadiradione; azadiradione; 7-deacetoxy, 7-hydroxy, 15-ethoxy-epi-azadiradione; 7-deacetoxy, 7,16-dihydroxy, 15-ethoxy- Δ^{16} -azadirone; 7-deacetoxy, 7,15 β , 16-trihydroxy, 14-ethoxy, 14,15-dihydro, Δ^{16} -azadirone; pesticidal activity.

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α , β -UNSATURATED KETONES: REACTIONS WITH ACETOACETANILIDES AND CYANOACETAMIDES

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(Received December 19, 1989; revised September 29, 1990)

Reaction of 3,4,5-trimethoxyacetophenone (1) with aromatic aldehydes gave α , β -unsaturated ketones (IIa-c), which upon reaction with acetoacetanilides in presence of sodium methoxide afforded the cyclic β -ketoanilides (IIIa-h). Treatment of III with hydrazines yielded the substituted benzopyrazolones (IVa-c). Reaction of α , β -unsaturated ketones (IIa-c and/or IIa-f) with cyanoacetamide gave the corresponding cyanopyridone derivatives (VIa-e) in a good yield. The structures of the hitherto unknown ring systems have been confirmed by their analytical and spectral data.

Key words: α , β -Unsaturated ketones, Acetoacetanilides, Cyanoacetamides.

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Reaction of 3,4,5-trimethoxyacetophenone (I) with aromatic aldehydes gave α , β -unsaturated ketones (IIa-c), which upon reaction with acetoacetanilides in presence of sodium methoxide afforded the cyclic β -ketoanilides (IIIa-h). Treatment of III with hydrazines yielded the substituted benzopyrazolones (IVa-c). Reaction of α , β -unsaturated ketones (IIa-c and/or IIa-f) with cyanoacetamide gave the corresponding cyanopyridone derivatives (VIa-e) in a good yield. The structures of the hitherto unknown ring systems have been confirmed by their analytical and spectral data.

Key words: α , β -Unsaturated ketones, Acetoacetanilides, Cyanoacetamides.

FATTY ACID COMPOSITION OF INDIVIDUAL LIPID FRACTIONS IN COTYLEDONS AND PRIMARY ROOTS OF ZEA MAYS (NEELUM)

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(Received November 7, 1989; revised October 11, 1990)

An investigation was conducted to study the variation in the fatty acid composition of the individual lipid fractions in *Zea mays* variety Neelum, cotyledons and primary roots during germination to various root length. Fatty acid composition of the lipid of cotyledons did not show much variations during germination as compared to the resting seeds. In the polar lipid fractions saturated fatty acids were higher than in the neutral lipids. In the primary roots, however unsaturated acids including the $C_{18:2}$ decreased. The quantities of the fatty acids were essentially lower than in cotyledons.

Key words : Fatty acid, Roots, *Zea mays*, Cotyledons, Primary roots.

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Key words : Fatty acid, Roots, *Zea mays*, Cotyledons, Primary roots.

CHARACTERISTICS OF CORONA VOLTAGE STABILIZER AND REGULATOR DEVICE

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(Received September 27, 1989; revised October. 11, 1990)

The present work is intended to investigate the properties of a perforated cathode wire-plate corona detector when used as corona voltage stabilizer and regulator (CVSR) device. In particular it is devoted to the investigation of the dependence of the stabilization and regulation on the inter electrode spacing (h_{a-c}) and the effect of the limiting resistance.

Key words: Corona voltage, Stabilizer, Regulator.

Introduction

depth = 1 mm). The distance between the centers of two

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EFFECT OF AFLATOXIN ON HAEMOGLOBIN AND SERUM PROTEIN CONCENTRATION IN THREE STRAINS OF BROILER CHICKEN

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(Received September 12, 1989; revised August 22, 1990)

Addition of 250 µg aflatoxin B₁/kg feed caused a decrease in haemoglobin content and serum protein levels in three strains of broiler chicken. The fall in haemoglobin level was of large magnitude, possibly because the haemoglobin synthesis is maintained preferentially at the expense of other proteins. The level of serum proteins, however, was much reduced (approximately 25%) during the second week of the study but improved slightly at the end of the third week. Possible reasons of these changes are discussed.

Key words : Aflatoxin, Haemoglobin, Serum proteins, Broiler strain.

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EFFECT OF DIETARY FATS ON CHICKS BODY GROWTH AND SERUM LIPIDS OF BROILER

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(Received October 24, 1989; revised May 15, 1990)

Blood lipid profile as a function of dietary fat was studied by carrying out nutritional trials on day old chicks (120) that were fed rations containing palm oil, hydrogenated cottonseed oil and soyabean oil (control) for six weeks. The parameters studied were total serum lipids, triglycerides, total cholesterol, low density and high density lipoprotein cholesterol as well as feed efficiency of the birds. A comparison of these parameters in the three fat treatments is discussed.

Key words : Fats, Lipid, Broiler chicks.

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EFFECT OF SILICON RATES ON THE YIELD OF RICE (VAR. BR₃) IN DIFFERENT SOILS

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(Received April 11, 1990; revised October 14, 1990)

A pot experiment in 1987 was conducted to assess the influence of 5 silicon levels (0,50,100, 200 and 400 ppm) on the yield performance of BR₃ rice in two different soils. Results showed that silicon application progressively increased the grain yield of rice upto 200 ppm and straw yield upto 400 ppm of the nutrient. The increase in grain yield largely resulted from a significant improvement in both number of filled grains per panicle and individual grain weight. A significantly higher grain yield was also obtained in Modhupur red brown terrace soils than Brahmaputra grey flood plain soils. Silicon rate comparatively showed a greater influence on the tissue nitrogen content of the straw than in the grain. The maximum grain uptake of nitrogen was obtained with application of 100 ppm of silicon while that for straw was achieved at the 400 ppm level. Total nitrogen uptake of the biological parts above the ground level was maximum at the 200 ppm silicon level which was 46% higher than in the control.

Key words: Silicon rate, Soil types, Grain yield.

PRESENCE AND DISTRIBUTION OF SORGHUM SMUTS IN SINDH

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(Received December 23, 1989; revised October 6, 1990)

Grain and long smut were the most prevalent diseases of the sorghum in Sindh, Pakistan. The level of infection by grain and long smut varied from 13% to 51% and from 12% to 54% respectively. The only places where long smut was not found were Mirpurkhas and Sanghar. Thirteen sorghum varieties were screened against grain smut by seed inoculation with spores. Most of the varieties were found resistant to the disease.

Key words: Sorghum vulgare, Sphacelotheca sorghi, Tolyposporium ehrenbergii.

IN VITRO PROPAGATION OF *ROSA HYBRIDA* CV. QUEEN ELIZABETH

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(Received October 28, 1989; revised October 16, 1990)

Internodal segments of rose cv. Queen Elizabeth (3-5 mm) thick were established in modified MS medium with different additives for callogenesis. The cultures were incubated at $25 \pm 2^{\circ}$ and exposed to light of $28 \mu\text{mol sec}^{-1} \text{ m}^{-2}$ for 16 hr a day. The best callus initiation was noted when culture medium was added with 2.5 mgL^{-1} 2,4-D, 0.25 mgL^{-1} kinetin and 2 mg L^{-1} casein hydrolysate. Callus index in dark condition was about 400 compared with 300 in light. The developed calli showed optimum shoot initiation when BA was employed @ 2.5 mgL^{-1} , but in some cultures, green nodular areas and rudimentary root formation was also observed. Axillary buds placed in the MS-media containing 3.5 mgL^{-1} BA were found to be the best as they produced new plants in 12-14 weeks of time. For root regeneration 2.5 mg L^{-1} NAA was found the best. Plants, thus, obtained were planted in a compost having clay, sand and leaf mold (1:1:1), the survival was about 80 %.

Key words: *In vitro*, *Rosa hybrida*, Tissue culture.

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SOME BASIC STUDIES ON KUKA WOOL FIBRES

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(Received February 7, 1989; revised September 17, 1990)

Forty samples of Kuka wool were selected at random from full fleeces. The fleeces were collected from the markets in the native habitat of the sheep, i.e. Dadu and Jacobabad. The samples were sorted into fibre types where necessary and were then subjected to dimensional measurements viz, diameter, length, medullation, mechanical properties and physico-chemical characteristics such as alkali solubility, clean wool content and vegetable matter, wool wax, suint, ash and regain were also determined.

Key words: Physico-chemical and mechanical characteristics of indigenous wool.

Short Communication

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Studies on Chemical Weed Control in Wheat

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(Received February 16, 1989; revised September 28, 1990)

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SYNTHETIC DRYING OIL

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(Received November 28, 1985; revised September 26, 1990)

Betulinol constitutes 25-28% of the bark of the *Betula utilis* (Bhojputr) found in the northern parts of Pakistan. Esterification of betulinol with fatty acids derived from cottonseed oil, practically a nondrying oil, resulted in esters which on further bodying at 300-10° for 1/2 hr exhibited improved drying character comparable with linseed oil. Comparative study of these esters and linseed oil in drying coating formulations is presented in this paper.

Key words. Synthetic drying oil, Betulinol, Polyhydric alcohols, Esterification.

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MODIFIED ATMOSPHERE PACKAGING OF PRE-COOKED GRAMS AND SOYBEANS APPLICATION OF DRYING AS AN ADJUNCT

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(Received February 19, 1990; revised October 9, 1990)

Pre-cooked foods such as grams and soybeans were either packaged under CO_2 atmosphere or surface-dried in a fluidized-bed dryer, followed by packaging under a CO_2 atmosphere. Carbon dioxide packaging extended the shelf-lives of both products upto six months, compared to controls (without CO_2) which spoiled within 10 days. Chance contamination through delayed packaging reduced the efficacy of the preservative system to 15-30 days (control spoiled within 24 hr.). Sensory scores of both the preserved products were high, though drying caused slightly reduced scores related to appearance (colour).

Key words: Modified atmosphere, Drying, Grams, Soybeans.

EDIBLE RICE BRAN OIL

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(Received January 4, 1990; revised October 13, 1990)

Pakistan imports 0.8 million tonnes of vegetable oil worth Rs. 8 billion to meet the requirement of the country. The rice bran which is a by-product of rice processing industry can furnish 51718 tonnes of edible oil after stabilization, extraction, degumming, winterization, refining, bleaching and deodorization. The oil yield on laboratory scale is 18.7%.

Key words : Extrusion stabilizer, Degumming, Winterization.