Studies on Phospholipids of Some Linseed Varieties

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Five varieties of Linseed (Linum usltatissimum) cultivated in the Vidarbha region, namely, C-429, R-552, RLC-4, RLC-6 and T-397, were extracted with chloroform-methanol (2:1, v/v) to get the total lipids (TL) which were then fractionated over a silicic acid column into neutral lipids (NL), glycolipids (GL) and phospholipids (PL). The PL were further separated into individual components namely, phosphatidylcholine (PC), phosphatidylethanolamine (PE), phosphatidylinositol (PI), cardiolipin (CL) and phosphatidylglycerol (LPG) by preparative TLC. The fatty acid composition of PL and its components, as determined by GLC, showed that linolenic acid was the predominant acid present, followed by oleic, linoleic, palmitic and stearic acids. The fatty acids remained constant qualitatively but differed quantitatively in the seed oils and phospholipids.

Linseed (Linaceae) is a prominent crop of Central India, where its seed oil is also consumed as an edible oil to some extent. Linseed cake contains toxic cyanogenic glucoside[1] which restricts its use in animal feeds. Some work on cottonseed varieties their phospholipids[2] content and other seed phospholipids[3-6] from this region has been reported. This work reports on the phospholipid composition of five linseed varieties along with the fatty acid composition of total as well as individual phospholipids.

The seeds of the five varieties of linseed were obtained from Punjabrao Krishi Vidyapeeth, Akola. The seeds were crushed and extracted with chloroform-methanol (2:1, v/v) following the modified Folch *et al.*[7] method, to obtain the TL which were then fractionated on a silicic acid column into neutral lipids (NL), glycolipids (GL) and phospholipids (PL) by Rouser *et al.*[8] method.

The PL were further fractionated into individual components namely, PC, PE, PI, CL and LPG by TLC employing the Mangold[9] procedure. Phosphorus was estimated by Harris and Popat[10] method. All the lipid material was converted to the respective fatty acid methyl esters (FAME) by Christie[11] method. The FAME were analysed for fatty acid composition on a GAS Chromatograph equipped with flame ionization detector (FID) at 280°, on a column packed with 15% EGSS-X on chromosorb-W (40-60 mesh). The chart speed was 60 cm/h and the temperature at injection port and column were 250° and 200° respectively. The carrier gas used was nitrogen at 30 ml/min. The fatty acids were identified by comparison of their retention times with standards (obtained from Analabs, USA). the percentage of fatty acids was computed by the area method[12].

The total PL fraction was resolved into PC, PE, PI, CL and LPG, PC (29.7-30.1%) was the major component followed by PE (25.5-24.7%), PI (22.7 - 23.4%), CL (19.5 - 20.3%) and LPG (2.5 - 4.0%). This was in good agreement with earlier work on cottonseed phospholipids[2].

The fatty acid analysis of these PL fractions showed the linolenic acid to be the major acid present in greater amounts followed by oleic and linoleic acids. The fatty acids did not differ qualitatively in the seed oil[14] and phospholipids.

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Synthesis of 1-(2'-Hydroxybenzoyl)-5-(Substituted Phenyl)-3-(2'-Methylindolyl)-2-Pyrazolines as Anti Inflammatory Agents

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1-(2'-hydroxybenzoyl)-5-(substituted phenyl)-3-(2'-methylindolyl)-2-Pyrazolines were prepared by the cyclocondensation of 2-methyl-3-indolyl substituted chalcones with salicylic acid hydrazide through Michael condensation, which in turn were synthesized by the reaction of 3-acetyl-2-methylindole and substituted aromatic aldehydes. These compounds were screened for antiinflammatory activity, ulcerogenic potential, CVS activity and acute toxicity. Compound 1-(2'-hydroxybenzoyl)-5-(2'-fluorophenyl)-3-(2'-methylindolyl)-2-pyrazoline showed the most potent antiinflammatory activity.

The pyrazoline derivatives have been reported to possess bactericidal[1], fungicidal[2], anticonvulsant[3], antiparkinsonian[4], anthelmentic[5] and antiinflammtory activities[6-9]. Further, indole derivatives such as indomethacin and tenidap[10] were also found to possess potent antiinflammatory activity. It was thought worthwhile to incorporate the indole moiety in pyrazoline heterocyclic system. This led us to synthesize a series of 1-(2'-hydroxybenzoyl)-5-(substitutedphenyl)-3-(2'-methylindolyl)-2-pyrazolines (9-16) through Michael condensation with a view to obtain potent antiinflammatory agents.

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Melting points were recorded in open capillary tubes and are uncorrected. The purity of the compounds was verified on silica gel G plates using benzene and methanol (8:2) as elutent. IR spectra were recorded in KBr on Perkin-Elmer 157 Spectrophotometer (υ_{mac} in Cm^{-1}). ^1H-NMR spectra (90 MHz) in $CDCl_3$ on a Perkin Elmer 32 spectrometer using TMS as internal reference standard (Chemical shift in δ ppm) and mass spectra on Jeol D-300. Physical and biological data of compounds (1-16) are given in table 1.

2-Methyl-3-indolyl-2-(fluorophenyl)chalcone (7) was prepared by adding a solution of 3-acetyl-2-methyl indole (0.01 mol) and 2-fluorobenzaldehyde (0.01 mol) in absolute ethanol (50 ml) in presence of 2% NaOH was refluxed for 8 h, concentrated, cooled and poured onto ice. The solid thus obtained was recrystallized from methanol/