QUALITATIVE AND QUANTITATIVE ANALYSIS OF PHENOLIC CONSTITUENTS OF VERNONIA CINEREA (L) LESS IN LINNAEA

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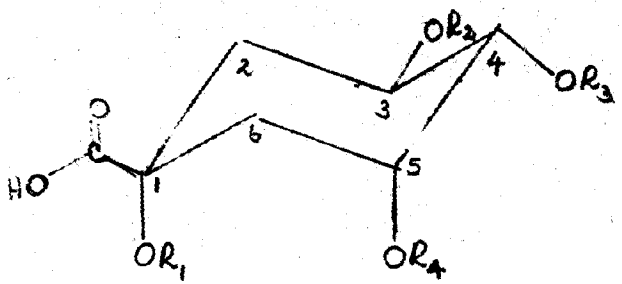
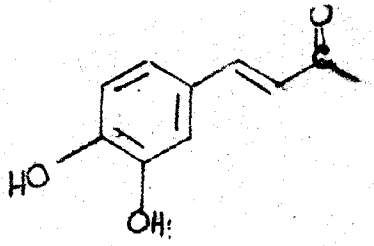
Caffeoylquinic acid derivatives (Fig.1) and some flavanoids have been shown by us to inhibit respiratory burst activity of Polymorphonuclear Leukocytes (PMNL). [1] These compounds have been isolated by us from Vernonia cinerea and caffeoylquinic acid derivatives are reported here for the first time for the Vernonia genus. These compounds were identified by UV, HPLC, ^{1}HNMR, 2D NMR, ^{13}C NMR, and Mass techniques.

The quantitation of these compounds will be important in the quality control and standardisation of Ayurvedic preparations containing Vernonia cinerea. While the quantitative analysis was carried out using HPLC, we also developed new TLC systems for the rapid identification of these compounds.

In contrast to the report by T. Adzet and M. Puigmacia[2], we find that (3,4) dicaffeoylquinic acid (equatorial- equatorial) is more strongly retained than the other isomers of dicaffeoylquinic acid in reverse phase HPLC.

C. Gunasingh and S. Nagarajan[3] have reported Chrysoeriol to be present in Vernonia cinerea based only on the paper chromatographic comparison with an authentic sample. We could find no evidence for the presence of Chrysoeriol (Fig 2) in our sample. However we isolated Apigenin (Fig 2) which has a structure close to Chrysoeriol and occurs at the same RF value as Chrysoeriol in the paper chromatographic systems reported by Gunasingh and Nagarajan. These two compounds can be clearly separated by reverse phase HPLC (using the Solvent system of MeOH/H_2O/HOAc by gradient elution /Spherisorb C_{18} column).





Caffeoyl

	R_1,	R_2,	R_3,	R_4
Quinic Acid	H	H	H	H
3,O-caffeoylquinic acid (chlorogenic acid)	H	Caffeoyl	H	H
[3,4]O-dicaffeoylquinic acid	H	Caffeoyl	Caffeoyl	H
[3,5]-O-dicaffeoylquinic acid	H	Caffeoyl	H	Caffeoyl
[4,5]-O-dicaffeoylquinic acid	H	H	Caffeoyl	Caffeoyl

(Fig 1)

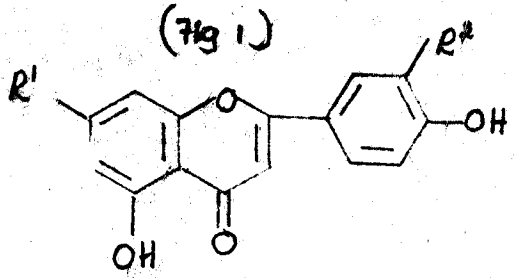


Fig. 2

	R^1	R^2
Apigenin	OH	H
Chrysoeriol	OH	OCH_3
Luteolin	OH	OH

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3. C. Barnabas Gnanaraj Gunasingh and S. Nagarajan (1981) Indian Journal of Pharmaceutical Science May-June 114.