Asian Journal of Chemistry Vol. 9, No 4 (1997), 877–878

NOTE

A New Anthraquinone Glycoside from the Heartwood of *Cassia auriculata* Linn

K.N. RAI*, KUMAR KAUSHALENDRA and JANARDAN SINGH†
Department of Chemistry
Shershah College (V.K.S. University, Ara), Sasaram-821 115, (India)

The present paper deals with the isolation and structural elucidation of a new anthraquinone glycoside, 3-hydroxy-6, 8-dimethoxy-2-methyl anthraquinone-1-O-β-D-galactoside from the heartwood of *Cassia auriculata* Linn.

In course of our studies on plant pigments of the genus Cassia[1-3], systematic chemical investigation of heartwood of *Cassia auriculata* (Leguminosae) has been undertaken. The plant is highly reputed for its medicinal value and tanning material.[4] The present communication reports the isolation of a new glycoside on the basis of chemical and spectral evidences.

Air-dried and crushed heartwood (10 kg) of the plant (collected from Kauakol botanical garden, Nawada and identified in Botany Department, Magadh University, Bodh-Gaya) was successively extracted with hexane, $CHCl_3$ and alcohol. The concentrated alcoholic extract was treated with ice-cold water and fractionated into water-soluble and water-insoluble parts.

The ethyl acetate extract of aqueous alcoholic fraction after concentration under reduced pressure was subjected to column chromatography on silica gel and eluted with hexane → $CHCl_3$ → EtOAc → MeOH gradient as eluent. The EtOAc—MeOH (8 : 2 v/v) eluate gave a compound which was crystallised from EtOAc–pet. ether mixture as light brown amorphous solid (950 mg). It responded to characteristic colour reactions of anthraquinones[5,6] and glycoside.[7] The compound analysed for (M^+ 476) gave m.p. 235–37°C; (Found: C, 56.88; H, 4.76. Calcd. for $C_{23}H_{24}O_{11}$: C, 57.98; H, 5.04%); λ_{max}(MeOH) 255, 265, 288, 418 nm.; ν_{max}(KBr) 3350 ν(OH), 2950 and 2885 ν(OMe), 1765, 1730, 1645, 1570, 1460, 1250, 1185, 1080, 960, 840, 810, 730 cm^{-1}; ^1H NMR (DMSO-d_6, 300 MHz) δ 2.38 (S, 3H, CH_3), 3.25–3.70 (br, sugar protons), 3.89 (s, 6H, OCH_3), 5.20 (d, 1H, J = 8 Hz, C—1′ galactosyl), 6.86 (d, 1H, J = 8 Hz, C—7), 7.25 (S, 1H, C—4), 7.68 (d, 1H, J = 8 Hz, C—5) and a phenolic hydroxyl at 7.55 (S, 1H, D 20

*Address for correspondence: Dr. Kashi Nath Rai, Head, Deptt. of Chemistry, Moh. Gaurakshani, P.O. Sasaram-821 115, Bihar, India.
†Lecturer, Deptt. of Chemistry, J.J. College, Dehri-on-Sone (Bihar), India.

exchangable, C_3—OH). Acid hydrolysis gave an aglycone, $C_{17}H_{14}O_6$, m.p. 272–74°C, which was identified as 1,3-dihydroxy-6,8-dimethoxy-2-methyl anthraquinone by UV, NMR, mass spectra and direct comparison with an authentic sample[8] and galactose (CO—PC, osazone, 183°C) in the hydrolysate. The galactose was found to be linked at position-1 of the aglycone[9] which was supported by specific colour reaction.[10] The permethylated glycoside on hydrolysis yielded 2,3,4,6-tetra-O-methyl-D-galactose which was identical to the methyl glactose obtained by D-glactose. Thus, on the basis of the above observations, structure of the new glycoside was assigned as 3-hydroxy-6,8-dimethoxy-2-methyl anthraquinone-1-O-β-D-galactoside.

ACKNOWLEDGEMENT

The authors are thankful to the Dy. Director and Head, RSIC, Lucknow for providing spectral analysis.

REFERENCES

1. K.N. Rai and S.N. Prasad, *J. Indian Chem. Soc.*, **71**, 653 (1994).
2. K.N. Rai, *J. Bang. Acad. Sci.*, **17**, 119 (1993).
3. K.N. Rai and R.A. Roy, *J. Bang. Acad. Sci.*, **15**, 193 (1991).
4. The Useful Plants of India, CSIR, New Delhi, p. 109 (1986).
5. R.H. Thomson, Naturally Occurring Quinones, Academic Press, London, 2nd edn., pp. 40–44 (1971).
6. R.D. Tiwari and A. Richards, *Planta Medica*, **36**, 91 (1979).
7. H. Molisch, *Monatsch. Chem.*, **7**, 108 (1886); K. Bhatt and V.K. Agrawal, *J. Indian Chem. Soc.*, **50**, 611 (1973).
8. J. Singh, *Planta Med.*, **41**, 397 (1981).
9. R.D. Tiwary and J. Singh, *J. Indian Chem. Soc.*, **54**, 429 (1977).
10. J. Somogyi, *Biochem. J.*, **19**, 195 (1951).

(*Received:* 21 March 1997; *Accepted:* 12 June 1997) AJC-1316