Chemical Examination of the Stems of *Cassia grandis* L.

MEENARANI AND S. B. KALIDHAR
Dept. of Chemistry and Biochemistry,
CCS HAU, Hisar - 125 004.

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From the stems of *Cassia grandis* three compounds palmitic acid, βsitosterol and emodin-9-anthrone have been isolated. All of these are being reported for the first time from this plant.

CASSIA grandis L. (Leguminosae) is a medium sized spreading tree. The pulp from the pods is very strong smelling with a bitter and astringent taste, which has laxative properties[1]. It is sometimes used in veterinary practices also and hence known as Horse Cassia[2]. The leaves are used to treat mange[3]. The juice from the pods is reported to strengthen the blood. A survey of literature revealed no report of the chemical study on the stems of *C. grandis*. Hence, a chemical examination of this plant part was undertaken. Stems of *C. grandis* (5 kg) obtained from Landscape Section, CCS HAU, Hisar, were chopped into small pieces. The dried stems were extracted with hot methanol. The extractives were taken up for phytochemical study by silica gel column chromatography. Elution of the column with benzene-petroleum ether (1:19), benzene and ethyl acetate-benzene (1:9) afforded compound **1** to **3** respectively.

Compound 1 (Palmitic acid) : It crystallised from benzene as colourless needles (15 mg), m.p. 63°; IR υ_{max} (Nujol): 1660 (C=0), 3300 (OH) cm^{-1}, ^1H NMR δ ($CDCl_3$): 10.81 (1H, s, -COOH), 2.30 (2H, t, *J* = 7.0 Hz, H-2, H-2), 1.61 (2H, br s, H-3, H-3), 1.35 (24H, s, 12 x-CH_2-), 0.89 (3H, t, *J* = 7.0 Hz, Me). A brisk effervescence with sodium bicarbonate solution and the spectral data suggested it to be palmitic acid[4,5].

Compound 2 (β-sitosterol): It crystallised from benzene as shinning white needles (25 mg), m.p. 134° IR υ_{max} (Nujol):3300 (OH) cm^{-1} the acetate ^1H NMR δ; ($CDCl_3$): 5.36 (1H, br s , H-6), 5.11 (1H, br s, H-3), 2.03 (3H, s, OAc-3), 2.33-0.67 ((47H, m, 7x-CH<, 11x-CH_2, 6x-CH_3). A positive response to Liebermann-Burchard reaction and the spectral data indicated it to be β-sitosterol[6].

Compound 3 (Emodin-9-anthrone): It crystallised from ethyl acetate as yellow platelets (10 mg), m.p. 255°; It showed a dull red colour with methanolic sodium hydroxide but no colour with methanolic magnesium acetate. IR υ_{max} (Nujol): 1640 (C=0), 3150 (OH) cm^{-1}; MS m/z (rel, int.): 256 (M^+, 23.58), 228 (2.89), 213 (9.69), 181 (10.41), 170 (3.03), 168 (100.0), 153 (75.96), 151 (34.29); ^1H NMR δ ($CDCl_3$): 7.71 (1H, br s, H-2), 7.54 (1H, br s, H-4), 7.25 (1H, d, *J* = 2.5 Hz, H-7), 7.14 (1H, d, *J* = 2.5 Hz, H-5), 5.35 (2H, s, H-10, H-10), 2.35 (3H, s, Me). The spectral data and other properties suggested it to be emodin-9-anthrone[7].

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REFERENCES

1. Chatterjee, A., Banerjee, J. and Basu, S. C. **Tetrahedron**, 1972, 5, 175.
2. Bentley, R. and Trimen, H. In; **Medicinal Plants,** Vol. II, International Book Distributors, Dehradun, 1983, 87.
3. Duke, I. A. In; **Isthmian Ethnobotanical Dictionary,** Scientific Publishers, Jodhpur, 1986, 41.
4. Heilbron, I., Cook, A. H., Bunbury, H. M. and Hey D. H. In; **Dictionary of Organic Compounds**, Eyre and Spottiswoode, London. 1965, 1591.
5. Sasaki, S. In; **Handbook of Proton NMR Spectra and Data, Vol. 5,** Academic Press, Tokyo, 1985, 190.
6. Kalidhar, S. B., Parthasarthy, M. R. and Sharma, P. **Phytochemistry,** 1982, 21, 796.
7. Buckingham, J. In; **Dictionary of Organic Compounds,** 5th Ed., Ninth Supplement, Chapman and Hall, London, 1991, 363.