

Chemotaxonomic study of *Albizia lebbek*

MILAN HAIT, ROHIT KUMAR BURGHAH and CHINMOYEE DAS*

*Department of Chemistry, Govt. E. Raghvendra Rao
P.G. Science College, Bilaspur - 495001(India).

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ABSTRACT

Chromatographic resolution of the flower of the *Albizia lebbek*, furnished Quercetin-3-O- α -L-rhamnopyranosyl (1 \rightarrow 6) - β -D-glucopyranoside which well characterised by spectral analysis.

Key words: *Albizia lebbek*, Quercetin-3-O- α -L-rhamnopyranosyl (1 \rightarrow 6)- β -D-glucopyranoside.

INTRODUCTION

Albizia lebbek (L.) Benth. of the family fabaceae that grows upto 30 m. high. It is large erect unarmed, deciduous plant spreading all over India. It has bipinnate leaves; bark rough, gray and globose head of fragrant flower, 1.5-2 cm. long stemens; pods are brown, 10-30 cm. long and seeds 6-12 per pod, brown.

It is used as antiallergic², anti-anthelmintic³, anti-asthamatic⁴, anti-cancer⁵, anti-diarrhoeal⁶, antifertility⁷, and anti-ulcer⁸ etc. In the present paper, we herein report the isolation and identification of a compound (I) Quercetin-3-O- α -L-rhamnopyranosyl (1 \rightarrow 6) - β -D-glucopyranoside from the flower of the *Albizia lebbek*.

EXPERIMENTAL

The air dried flowers of *Albizia lebbek* were extracted with hexane, benzene, chloroform, ethylacetate and n-butanol. Chloroform soluble fraction was repeatedly chromatographed on a silica gel. A fraction from eluent was again

chromatographed by eluting with benzene-chloroform (6:4 v/v) to afford compound(I) recrystallised from MeOH to afford homogenous light brown powdered (C₂₇H₃₀O₁₆), mp.214°C, Rf 4.5 (Benzene - chloroform 6:4 v/v), UV spectral data λ_{max} (nm): 246, 360sh (MeOH); 246sh, 271 (NaOAc); 264, 372 (NaOAc/H₃PO₃); 265, 300 (AlCl₃/HCl); 270, 320sh (NaOMe). ¹H-NMR (DMSO-d⁶) of I: aglycon moiety: δ 6.12 (d, J = 2 Hz, H-6), 6.83 (d, J = 8 Hz, H-5'), 7.52 (m, H-2' and H-6'); suger moieties: 4.44(d, J = 2.5 Hz, rhamnosyl H-1), 4.2(d, J = 8 Hz, glycosyl H-1), 3-3.8 (m, suger protons), 0.85 (d, J = 6 Hz, methyl rhamnosyl protons). ¹³C NMR (DMSO-d⁶): 155.58 (C-2), 133.0 (C-3), 176.40 (C-4), 161.01 (C-5), 99.40(C-6), 163.98(C-7), 94.00(C-8), 156.27(C-9), 103.28(C-10), 121.00 (C-1'), 115.26(C-2'), 141.1(C-3'), 149.0(C-4'), 116.2(C-5'), 121.6(C-6'). Rhamnose moiety: 100.6 (C-1), 70.2 (C-2), 70.3 (C-3), 71.3(C-4), 68.3(C-5), 17.8(Me); Glucose moiety: 102.1(C-1), 74.2(C-2), 76.6(C-3), 70.5(C-4), 75.8(C-5), 67.1(C-6).

Acid hydrolysis of compound (I) with 0.2N HCl for 3 hrs., the content was poured into ice cold water, when a yellowish ppt. separates out. This was

recrystallised from MeOH to give aglycon(II). It was obtained as a yellow crystal from MeOH, m.p. 310°C, mf C₁₅H₁₀O₇, M⁺ at m/z 302, responded positive colour test for flavones, ¹³C NMR (DMSO-d₆): 156.2(C-2), 133.5(C-3), 177.2(C-4), 161.2(C-5), 98.6(C-6), 164.1(C-7), 93.5(C-8), 156.3(C-9), 104.1(C-10), 121.0(C-1'), 115.2(C-2'), 114.6(C-3'), 148.6(C-4'), 115.9(C-5'), 121.8(C-6'). The hydrolysate was neutralised with BaCO₃ and tested for sugar by PC and TLC. Only Quercetin-3-O- α -L-rhamnopyranosyl (1 \rightarrow 6)- β -D-glucopyranoside were identified on comparison with authentic sample.

RESULTS AND DISCUSSION

The compound (I) mf C₂₇H₃₀O₁₆, mp.214°C showed UV absorption bands at 246 and 360 (MeOH) characteristics of flavone glycoside. ¹H NMR of (I) gave two distinct anomeric protons resonances at 4.44 (d, J = 2.5 Hz) and 4.2 (d, J = 8 Hz), assignable to the rhamnosyl H-1 and glucosyl H-1 anomeric proton respectively. These chemical shift values indicated the attachment of rhamnoside anomeric carbon to the Quercetin hydroxyl group and the attachment of remaining sugar moieties to an alcoholic sugar hydroxyl. The recorded coupling

constants proved that α -configuration of the anomeric rhamnopyranosyl carbon and α configuration at the anomeric carbon in the glycosyl moiety. The attachment of the rhamnose to C-6 of the glycosyl moiety was evidenced by the downfield shift of the glycosyl C-6 carbon resonance to δ 67.1 ppm and accompanying upfield shift of the resonances of the adjacent carbons C-5 to 75.8 ppm. The chemical shift values of all the recorded sugar carbon resonances confirmed the pyranose form of the two sugar moieties, in the molecule of (I).

These data finally confirmed the structure of (I) to be Quercetin-3-O- α -L-rhamnopyranosyl (1 \rightarrow 6)- β -D-glucopyranoside.

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