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Kaempferol-7-O-β-alloside from *Moringa pterygosperma*

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ABSTRACT

Chromatographic resolution of the floral part of *Moringa pterygosperma* furnished Kaempferol-7-O-β-D-alloside which were characterized by spectral analysis.

Key words:*Moringa pterygosperma,* Kaempferol-7-O-β-D-alloside.

INTRODUCTION

Moringa pterygosperma Gaertn1 of the Moringaceae family that grows to 10-15 meters high. It is rapidly growing tree that resembles a legume, has tripinnate leaves, a gummy bark and fragrant flowers with white petal. The flowers are 1.5 to 2 cm long. The brown three angled fruits are up to 45 cm long and have winged seed.

It leaves are used in antibacterial[2], antitumor[3], hypotensive[4], antiseptic[5], antiulcer[6], anticancer[7] and antioxidant[8]. From time to time different compounds are isolated from various parts of this plant such as Kaempfreol, rhamnetin, quercetin from flower vanillin, β-sitosterol, octa cosanoic acid from stem and aminoacid, aspartic acid, lucine, phenyl alanine, lysine from leaves. In the present paper, we herein report the isolation and identification of a compound kaempferol-7-O-β-D-alloside from the flower of *Moringa pterygosperma.*

EXPERIMENTAL

Air dried and powdered flowers of *Moringa pterygosperma* were extracted with hexane, benzene, chloroform, ethyl acetate and n-butanol. EtOAc soluble fraction was repeatedly chromatographed on a silica gel and further purification on cellulose plate. A fraction from eluent was again chromatographed by eluting with benzene -ethylacetate (6:4 v/v) to afford compound(I) recrystallised from MeOH to afford homogeneous yellow needles (C^{21} H^{20} O^{11}), mp 195°-197°C, Rf 0.21 (Benzene-chloroform 2.8 v/v) ,UV l max (nm): 240, 350 (MeOH), 250,400 dec (NaOMe), 240, 425 ($AlCl^3$/HCl), 285 dec, 380 (NaOAc), 250 sh, 380 sh (NaOAc/H3B03). 1H NMR (DMSO-d^6): 13.9 (2H,d,J 9.0 Hz, H-2` and H-6`), 6.91 (2H,d,J 9.0 Hz, H-3` and H-5`), 6.40 (1H,s,H-6), 6.60 (1H,s,H-8), 5.6 (`1H,d,J 7.8 Hz, H-1", allosyl), 3.4 (6H,m,Sugar protons), $^{13}$C NMR (DMSO-$d^6$), 146.8 (C-2), 135.6 (C-3), 175.9 (C-4), 160.7 (C-5), 98.3 (C-6), 163.9 (C-7) 93.5 (C-8), 156.2 (C-9), 103.1 (C-10), 121.7 (C-1`), 129.5 (C-2`), 115.4 (C-3`), 159.2 (C-4`), 115.4 (C-5`), 129.6 (C-6`), 99.9 (C-1``), 71.6 (C-2``), 71.6 (C-3``), 67.2 (C-4``), 75.1 (C-5``), 61.3 (C-6``).

Acid hydrolysis of compound (I) with 0.2 N H_2SO_4 for 3 hours. The content was poured into ice cold water, when a yellowish ppt. separated out. This was recrystallised from MeOH to gave aglycone (II). It was obtaind as a yellow crystal from MeOH, mp 280°C, mf $C_{15}H_{10}O_6$, M+ at m/z 286, responded positive colour test for flavone, 13C NMR

(DMSO-d^6): 146.8 (C-2), 135.6 (C-3), 175.9 (C-4), 160.7 (C-5), 98.2 (C-6), 163.9 (C-7), 93.5 (C-8), 156.2 (C-9), 103.1 (C-10), 121.7 (C-1`),129.5(C-2`), 115.4 (C-3`), 159.2 (C-4`), 115.4(C-5`), 129.5 (C-6`). The hydrolysate was neutralised with BaCO3 and tested for sugar by pc and tlc. Only β-D-alloside were identified on comparision with authentic sample.

RESULTS AND DISCUSSION

The compound (I) mf $C_{22}H_{20}O_{11}$, mp. 195-197°C showed UV absorption bands at 240 and 350 (MeOH) characteristic9 of flavone glycoside. 13C NMR of compound (I) C-7, C-6 and C-8 signal appeared at 163.9 (1.4 ppm up field shift), 98.3 (1.2 ppm down field shift) 93.5 (1.5 ppm down field shift) respectively conforming the site of glycosidation to at C-7 of the aglycone (II). The high field position of the second anomeric proton signal, indicating a sugar linkage supported the glycosylated kaempferol structure.

Thus the structure to the glycoside was assigned as kaempferol-7-O-β-D-alloside (I).

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