

PHYTOCHEMICAL INVESTIGATION OF THE FLAVONOIDS OF STEVIA (COMPOSITAE)

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The genus Stevia, a member of the Compositae tribe Eupatorieae has some 110 species which occur in tropical America. The principle taxonomic work is that of Grashoff (1972). However, further taxonomic work on this group is required and investigation at the phytochemical level has been considered useful in this respect. Recent interest for economic reasons has centred around the sweet diterpenes of S. rebaudiana (Mitsuhashi et al 1975) currently used in Japan as sweeteners in some soft drinks and meat preparations. Other compounds, chromenes, pseudoguaianolides and acetylenes have been isolated from a number of other species, in all about six species have been investigated phytochemically (Heyward et al 1977). Only one record exists for the isolation of flavonoids that of 5,6-dihydroxy-7,8,4'-trimethoxyflavone (Dominguez et al 1974).

The recent pharmaceutical interest in the antiviral and larval growth inhibiting activity of some simple flavones (Elliger et al 1980) and the more extended interest in the cytotoxic activity of the methoxylated flavones (Edwards et al 1979) prompted an investigation of flavonoids of the genus Stevia. Closely related species within the Eupatorieae subtribe Piqueriinae have been shown to contain a number of methoxylated flavones.

Three species have to date been investigated S. microchaetz, S. nepetifolia and S. rebaudiana. The two former species were collected in Oaxaca, Mexico, the last was cultivated material from a plantation in the Philippines. S. microchaetz yielded a series of flavonoid monoglucosides of the sugars glucose and galactose with the aglycones apigenin, luteolin and quercetin. Two compounds were sulphated. Luteolin and apigenin were most commonly substituted at the 7-OH and 4'-OH positions, whereas the glycosides of quercetin were in the 3-OH position. This specie is a woody perennial which is generally considered to be one of the primitive members of the genus. The species S. rebaudiana and S. nepetifolia contained a similar range of flavonoid glycosides with the addition of glycosides containing rhamnose and arabinose. However, no sulphated compounds were isolated. These species did contain methoxylated flavones: the major flavone constituent of S. rebaudiana is Centureidin and in S. nepetifolia a novel 5-hydroxy pentamethoxy flavone. All flavonoids were isolated using standard techniques (Mabry et al 1970). Structural determinations were made using UV spectroscopy, PMR and MS together with comparison with authenticated reference substances where applicable.

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