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FLAVONOID *C*-GLYCOSIDES OF THE *GIBASIS SCHIEDEANA* COMPLEX

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Key Word Index—*Gibasis schiedeana*; Commelinaceae; genetic complex; mono- and di-*C*-glycoflavones.

Plants and sources. 20 diploid and 21 tetraploid plants of *Gibasis schiedeana* grown at the Royal Botanic Gardens have been examined. All were originally collected from natural populations in Mexico by Dr. D. Hunt (Royal Botanic Gardens, Kew); most of them were taken from 10 different localities in the Sierra Madre Oriental with a few diploid plants from the Sierra Madre Occidental. Voucher speciments are kept in the Herbarium of the Royal Botanic Gardens.

Previous work. No chemical work has been carried out on *Gibasis* species: indeed only a few other genera of Commelinacea have been examined, mainly for flavonoids [1–3].

Plant part examined. Fresh leaves from plants grown in the greenhouse were used. Concentrated 80% MeOH extracts were chromatographed by 2–D PC in BuOH–HOAc–H_2O (6:1:2) and 15% HOAc. The only flavonoids present were mono- and di-*C*-glycoflavones. The glycoflavones were isolated by column chromatography on Sephadex LH 20 [4] and conventional thick PC [5] in BAW, 15% HOAc, H_2O and, finally, for the di-*C*-glycoflavones, by TLC on silica gel in EtOAc–C_5H_5N–H_2O–MeOH (16:4:2:1) (EPWM) [6]. The compounds were identified by R_f values (PC and TLC), UV and MS spectra [6] in comparison with authentic markers.

Two groups of diploid plants were found. The first, Group I, (5 plants from S.M. Occidental) contained isovitexin and isoorientin as the major constituents, together with smaller amounts of 6-*C*-glucosyl-8-*C*-xylosylapigenin (R_f values × 100: BAW: 30; 15% HOAc: 50; H_2O: 22; EPWM: 38) and the corresponding derivative of luteolin (R_f's (same solvents): 28; 30; 15; 12). The second group of diploids, group II (15 plants from S.M. Oriental) contain two different di-*C*-glycoflavones, schaftoside (6-*C*-glucosyl-8-*C*-arabinosylapigenin) (R_f's 25; 45; 25; 42), being the more abundant, with lucenin-5 (R_f's 12; 32; 18; 18) as a minor constituent, and no mono-*C*-glycoflavones. We presume that lucenin-5 is the luteolin derivative corresponding to schaftoside, since MS shows it to be a *C*-pentosyl-*C*-hexosyl derivative and its R_f values are different from lucenin-1 and -3.

In the tetraploid populations (all from S.M. Oriental) three types of flavonoid pattern were found. The first group, III, (5 plants from different localities) has an identical pattern to the diploid plants of group II. The second group, IV, (11 plants) possess a pattern like the diploids of group I, but also contain traces of schaftoside and lucenin-5. The third group of tetraploids, V (5 plants) is of special interest because they carry B-chromosomes [7] and their flavonoid pattern shows a close similarity with those of groups II and III but, in addition, contain traces of isovitexin and isoorientin.

Although three of the di-*C*-glycoflavones identified have been reported earlier (see review of Chopin and Bouillant [6] they have a very restricted distribution. The only *C*-glycosyl derivatives previously reported in the family is flavocommelinin (4-*O*-glucoside of 6-*C*-glucosylgenkwanin) from *Commelina communis* [1]. No *O*-glycosides of the compounds present in *G. schiedeana* could be detected. It should be noted that the Commelinaceae as a whole contain low concentrations of flavonoids and, apparently, fewer different types than many other plant families [3].

The distribution of the various *C*-glycosides among the populations studies is genetically interesting. The tetraploids of *G. schiedeana* are autotetraploids which have undergone Robertsonian fusion [8], but ploidy change has not affected the flavonoid pattern in the same way as has been observed for *Rubus ideaeus* [9] or *Briza media* [10]. It appears likely that, instead, variable loss of chromosome fragments following fusion can account for the flavonoid patterns observed and aspects of the genetic factors involved are discussed elsewhere [11].

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