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SHORT COMMUNICATION

OCCURRENCE OF ISOSALIPURPOSIDE IN THE FLOWERS OF *RUNGIA REPENS*

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Abstract—Variation in the flavonoids of the flowers of *Rungia repens* (Acanthaceae) has been studied and the occurrence of isosalipurposide along with luteolin and its 7-glucoside is recorded. Delphinidin-3,5-diglucoside and lutein have been found to be the other pigments.

THE PIGMENTS of the flowers of *Rungia repens* (Acanthaceae) were earlier investigated in our laboratories when we recorded[1,2] the presence of two luteolin glucosides in the ivory-white flowers collected during January–February 1963 and luteolin and chrysoeriol glucosides in the pale-yellow variety during the same months in 1965. As a result of a survey of some South Indian plants of Acanthaceae for flavonoids, we also observed[3] luteolin (or a closely related flavone) to be a characteristic component of the members of this family, no flavonol having been identified in them.

We have now repeated our studies on the flavonoids of the flowers of *R. repens* collected during February–March 1968 and examined flowers which were: (i) deep yellow in the tubular portion with significant bluish pink spots on the upper portions of the corolla, (ii) pale yellow and (iii) ivory white. We identified, as before, only luteolin and chrysoeriol and their glucosides in the white and pale-yellow form. However, the flowers with deep-yellow tubular portion and bluish pink spots have been found to contain isosalipurposide (2′-glucosyloxy-4,4′,6′-trihydroxy chalcone), co-occurring with luteolin and its 7-glucoside. The bluish pink colour has been found to be due to delphinidin-3,5-diglucoside.

Recently, Harborne[4] recorded the occurrence of isosalipurposide along with luteolin 7-glucoside in the petals of *Asystasia gangetica*, collected from the Royal Botanical Gardens, Kew, the only earlier record of the occurrence of isosalipurposide in Acanthaceae. This observation prompted us to collect *A. gangetica*,[5] growing wild in and around Pondicherry, to get isosalipurposide for comparison, but we could isolate only luteolin 7-glucoside and isosalipurposide was absent.

[1] S. SANKARA SUBRAMANIAN and A. G. R. NAIR, *Indian J. Chem.* **2**, 338 (1964).
[2] S. SANKARA SUBRAMANIAN and A. G. R. NAIR, *Indian J. Chem.* **4**, 461 (1966).
[3] A. G. R. NAIR, S. NAGARAJAN and S. SANKARA SUBRAMANIAN, *Current Sci. (India)* **34**, 79 (1965).
[4] J. B. HARBORNE, *Phytochem.* **5**, 111 (1966).
[5] J. S. GAMBLE, *Flora of the Presidency of Madras*, Vol. 2, p. 7441, Botanical Survey of India, Calcutta (1957.)

EXPERIMENTAL

Fresh flowers of *Rungia repens*, collected in February–March 1968, were extracted with hot methanol and the extracts concentrated *in vacuo*. The aqueous concentrate was worked with petroleum ether, ether and ethyl acetate in succession. The residue from the petroleum ether layer was purified by adsorption chromatography on alumina and the major carotenoid pigment was identified as lutein[6] by colour reactions and absorption characteristics. The residue from the ether layer contained luteolin, while the residue from the ethyl acetate layer showed the presence of three pigments, two turning bright yellow and the third orange-red on exposure to ammonia. These three components were separated by preparative paper chromatography (Whatman No. 3, *n*-BuOH:27% acetic acid, 1:1 v/v, 16 hr) and the three zones (R_f: 0·31, 0·56 and 0·75) were cut out, eluted with methanol and individually examined. The component, R_f 0·75, gave typical colour reactions for a chalcone, and the deep-yellow pigment, m.p. 152–153°, was identified as isosalipurposide[4,7] by paper chromatography in five solvent systems. On hydrolysis with 4% sulphuric acid, it gave naringenin, identified by its m.p. 247–248°, colour reactions, R_f values (m.m.p. and co-chromatography with an authentic sample) and glucose. Direct comparison of the chalcone glucoside with a sample of isosalipurposide, synthesized from the flavanone salipurposide by treatment with KOH and citric acid,[8] confirmed the identity. The component, R_f 0·56, on crystallization, yielded luteolin 7-glucoside, m.p. 251–253° (m.m.p. with an authentic sample undepressed). The component, R_f 0·31, was not fully identified; it yielded an almost colourless solid which appeared to be a flavanone by colour reactions, and which had R_f values on paper near to those of hesperitin. The bluish pink upper portion of the petals of *R. repens*, on extraction with 0·1% methanolic HCl, gave delphinidin-3,5-diglucoside, identified by paper chromatography and by hydrolysis with 2 N HCl when it formed delphinidin and glucose.[9]

Flowers of *Asystasia gangetica* from plants growing wild in open areas, on similar extraction and fractionation, yielded only free luteolin and luteolin 7-glucoside (yield about 2 per cent on the dry basis). No isosalipurposide could be identified in any of the fractions.

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[6] T. W. GOODWIN, in *Modern Methods of Plant Analysis* (edited by K. PAECH and M. V. TRACEY), Vol. 3, p. 294, Springer-Verlag, Berlin (1955).
[7] G. ZEMPLEN, R. BOGNÁR and I. SZEKELY, *Chem. Abstr.* 6264 (1943).
[8] B. PURI and T. R. SESHADRI, *J. Sci. Ind. Res.* (*India*) **13B**, 475 (1954).
[9] J. B. HARBORNE, *Comparative Biochemistry of the Flavonoids*, p. 33, Academic Press, London (1967).