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AWOBANIN FROM THE BIRDSFOOT TREFOIL
(*LOTUS CORNICULATUS*, LEGUMINOSAE)

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Lotus corniculatus L. has been the object of numerous chemical investigations analyzing its flavonoid (Harborne, 1971) and triterpenoid (Walter, 1961) constituents and its seed proteins (Lester, 1968). No previous report has noted the presence of anthocyanins in this plant.

MATERIALS AND METHODS

Lotus corniculatus flowers were collected 1 mi S of Stewart's Point on U.S. Highway 1, Sonoma Co., Calif. (Young 1246; voucher deposited in RSA). Flower petals were extracted with MeOH and the extract was filtered and concentrated under reduced pressure. Concentrated extract was streaked on Whatman 3MM chromatographic paper sheets and subjected to one-dimensional paper chromatography utilizing the BAW solvent system (*n*-butanol, acetic acid, water: 4,1,5). Visually apparent anthocyanin-containing bands were cut out, eluted with MeOH, and the purified compound was used for subsequent chromatographic studies. Acid hydrolysis of the glycone was in 6% aqueous HCl at 100 C for 4-5 hr. Solvent systems used: 15% HOAc-HCl (3% HCl in aqueous 15% acetic acid); Bu-HCl (*n*-butanol, 2*N* HCl: 1,1—upper phase used) and TBA (tertiary butyl alcohol, acetic acid, water: 3,1,1).

RESULTS

A single anthocyanin was detected in extracts of *L. corniculatus* upon initial chromatography. Acid hydrolysis of this compound yielded delphinidin. *R_f* values for the compound in various solvent systems are shown in Table 1 with values for awobanin from the literature where available. Chromatographic properties of the *L. corniculatus* anthocyanin show it to be awobanin [delphinidin 3-(0-*p*-coumaroylglucosido)-5-glucoside].

DISCUSSION

The occurrence of anthocyanins in the Leguminosae has been reviewed recently by Harborne (1971). Adinarayana and Seshadri (1966) noted 6-alkylated pelargonidin-3-sophoroside in the petals of *Cassia marginata* Sesse & Moc. The present communication constitutes the second report of the occurrence of an alkylated anthocyanin in the Leguminosae.

TABLE 1. R_f values ($\times 100$) for *Lotus corniculatus anthocyanin* and *awobanin* in various solvent systems.

Solvent	<i>L. corniculatus</i> anthocyanin	Awobanin (Harborne, 1967)
BAW	32 (1) ^a	30 (1)
	29 (3MM)	
15% HOAc-HCl	31 (1)	32 (1)
	27 (3MM)	
1% HCl	07 (3MM)	05 (1)
Bu-HCl	21 (3MM)	22 (1)
TBA	13 (3MM)	—
15% HOAc	41 (3MM)	—
30% HOAc	54 (3MM)	—
50% HOAc	61 (3MM)	—

^a Whatman paper number given in parentheses.

The compound awobanin has been studied as the metallo-anthocyanin complex, commelinin (Mitsui, Hayashi, and Hattori, 1959) from its only other reported source, *Commelina communis* L. (Kuroda, 1936). The present communication is the first report of any anthocyanin from the genus *Lotus* and, in view of the unusual nature of this compound, the value of a more thorough survey of additional *Lotus* species and related genera is indicated.

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