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SHORT COMMUNICATION

FLAVONOIDS OF THE NORTH AMERICAN SPECIES OF *LEUCOPHYSALIS* (SOLANACEAE)

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Abstract—The known flavonoids, quercetin 3-rutinoside-7-glucoside, kaempferol 3-rutinoside-7-glucoside, quercetin 3,7-diglucoside, rutin, kaempferol 3-rutinoside, quercetin 3-glucoside, kaempferol 3-glucoside, quercetin 7-glucoside, and kaempferol 7-glucoside were found in leaf extracts of *Leucophysalis nana* and *L. grandiflora*; the latter species also contained kaempferol 3,7-diglucoside.

INTRODUCTION

Leucophysalis has been recognized as a monotypic genus (*L. grandiflora*) of the Great Lakes region of North America. However, during the course of a monograph of the related genus *Chamaesaracha*, an additional two species, (*L. nana* and *L. heterophylla*), have been added to *Leucophysalis*[1] from *Chamaesaracha*, in part, as a result of the flavonoid analysis of the two genera. The flavonoid chemistry of two species of *Leucophysalis* (*L. nana* and *L. grandiflora*), which were found to elaborate a variety of kaempferol and quercetin glycosides, are described here.

FLAVONOID IDENTIFICATIONS

Quercetin 3-*O*-rutinoside-7-*O*-β-D-glucoside (I), kaempferol 3-*O*-rutinoside-7-*O*-β-D-glucoside (II), quercetin, 3,7-*O*-β-D-diglucoside (III), kaempferol 3,7-*O*-β-D-diglucoside (IV), rutin (V), kaempferol 3-*O*-rutinoside (VI), quercetin 3-*O*-β-D-glucoside (VII), kaempferol 3-*O*-β-D-glucoside (VIII), quercetin 7-*O*-β-D-glucoside (IX), and kaempferol 7-*O*-β-D-glucoside (X) were detected in the leaf extracts of *L. grandiflora*; *L. nana* contained the same compounds with the exception of compound IV (Table 1). The compounds were extracted from leaf material, isolated from two-dimensional paper chromatograms and identified by standard procedures.[2]

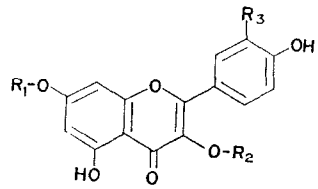
EXPERIMENTAL

Dried and ground leaf material* of both *L. nana* and *L. grandiflora* was extracted overnight with 85% methanol. Two-dimensional paper chromatograms were prepared from the extract using Whatman 3MM

* The leaf material was obtained from vouchers deposited in the University of Texas at Austin Herbarium.

[1] J. E. AVERETT, *Annals of the Missouri Botanical Garden* (in press.)
[2] T. J. MABRY, K. R. MARKHAM and M. B. THOMAS, *The Systematic Identification of Flavonoids*, Springer-Verlag, New York (1970).

TABLE 1. SUBSTITUTIONS* AND CONCENTRATIONS† OF THE FLAVONOIDS ISOLATED FROM THE SPECIES OF *Leucophysalis*



Cpd				Species	
	R_1	R_2	R_3	*L. grandiflora*	*L. nana*
I	glc	glc-rha	OH	+++	+++
II	glc	glc-rha	H	+++	+++
III	glc	glc	OH	++	++
IV	glc	glc	H	+	–
V	H	glc-rha	OH	+++	+++
VI	H	glc-rha	H	+++	+++
VII	H	glc	OH	+	+
VIII	H	glc	H	+	+
IX	glc	H	OH	++	++
X	glc	H	H	++	++

* glc = glucose, rha = rhamnose
† Relative concentrations (+++ = major; – = absent)

paper (46 × 57 cm) using first *t*-BuOH–HOAc–H_2O (3:1:1) in the long direction and then 15% HOAc in the second dimension. The flavonoids present were subsequently isolated by standard paper chromatographic procedures.[2] The UV spectral analyses of the isolated compounds were recorded using standard diagnostic reagents.[2] Identification of the sugar moieties was accomplished by the use of β-D-glucosidase and/or paper chromatography.[2]

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