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SHORT COMMUNICATION

GLUCOSINOLATES IN SOME NEW WORLD SPECIES OF CAPPARIDACEAE

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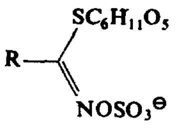
Abstract—Leaves of four South-American species of the genus *Capparis* (Capparidaceae) have been examined for their content of glucosinolates. From chromatographic evidence, it appears that *C. baducca* L., *C. hastata* Jacq., and *C. odoratissima* Jacq. contain methylglucosinolate. In *C. flexuosa* L., benzylglucosinolate is present, the first record of an aromatic glucosinolate in the Capparidaceae.

INTRODUCTION

IN THE course of a systematic study of the chemical character and distribution of glucosinolates (I) in the Capparidaceae (cf. the previous communication[1]), we have investigated leaf material of a few South American species of the genus *Capparis*; viz. *C. baducca* L. (*C. frondosa* Jacq.) *C. flexuosa* L., *C. hastata* Jacq. and *C. odoratissima* Jacq. We report the results here.



(I)

RESULTS AND DISCUSSION

Leaf material of the four *Capparis* species was kindly collected in the wild in Columbia by Dr. A. Dugand, Barranquilla, Columbia, who also identified the species.

Paper chromatographic analysis, in two solvent systems, of 70 per cent methanol extracts of the dried leaves revealed the presence of only one glucosinolate in *C. baducca*, *C. hastata*, and *C. odoratissima*, having the same R_f as methylglucosinolate (I, R = Me), the characteristic and predominant glucosinolate of the caper family.[1] No further efforts were made to verify the identification of this glucosinolate. The leaf extract of *C. flexuosa* also exhibited one glucosinolate spot which, however, was definitely different from the methyl congener (I, R = Me).

Enzymic hydrolysis of the glucosinolate isolated from 200 g of dried leaves of *C. flexuosa* gave benzyl isothiocyanate (II), identified as 1-benzylthiourea (95 mg) after reaction with ammonia. Hence, the glucosinolate in *C. flexuosa* appears to be benzylglucosinolate (I, $R = C_6H_5CH_2$), a common constituent of Cruciferae and other families.[2] The present

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[1] A. KJÆR and H. THOMSEN, *Phytochem.* 2, 29 (1963).

[2] M. G. ETTLINGER and A. KJÆR, in *Recent Advances in Phytochemistry* (edited by T. J. MABRY, R. E. ALSTON and V. C. RUNECKLES), Vol. 1, p. 58, Appleton-Century-Crofts, New York (1968).

report, however, is the first of a glucosinolate possessing an aromatic side-chain in the sixty or more species of the Capparidaceae thus far examined.[1, 2]

$$C_6H_5CH_2NCS$$

II

In a recent communication,[3] Brown and Stuart reported that dried leaves of *C. flexuosa* L., collected in Jamaica, contained both methyl- (I, R = CH_3) and 5-oxoheptyl-glucosinolate (I, R = $CH_3CH_2CO(CH_2)_4$). The reason for the discrepancy is being studied. Most likely it reflects differences in the plant material collected in Columbia and Jamaica.

EXPERIMENTAL

Paperchromatographic Analysis

Solutions prepared by extraction of the dried, pulverized leaves (1 g) with 70% MeOH (10 ml) were subjected to chromatographic analysis for glucosinolates on paper in the systems: *n*-BuOH:EtOH:H_2O (4:1:4) and *n*-BuOH:pyridine:H_2O (6:4:3), as described in a preceding communication.[4]

Isolation of 1-*Benzylthiourea*

Dried leaves (200 g) of *Capparis flexuosa* L. were pulverized and extracted twice with 2-l. portions of 70% MeOH. The filtrate was concentrated to 400 ml *in vacuo*. A 20% lead acetate solution was added, until no more precipitate formed. After filtration, 20% Na_2HPO_4 solution was added to remove lead ions. To the filtrate (650 ml), a crude myrosinase solution (10 ml) and ascorbic acid (10 mg) were added. After 4 hr, the isothiocyanate produced was extracted with Et_2O and the extract was washed with Na_2CO_3 solution and H_2O. To the dried ethereal solution was added an excess of anhydrous NH_3 in MeOH, and the mixture was set aside at room temperature for 5 hr. The residue was recrystallized twice from water to give colourless needles (95 mg), m.p. 162°, alone or in admixture with an authentic specimen of 1-benzylthiourea. The naturally derived and synthetic specimens exhibited coincident i.r. spectra.

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[3] I. V. BROWN and K. L. STUART, *Phytochem.* 7, 1409 (1968).

[4] R. GMELIN and A. KJÆR, *Phytochem.* 9, 591 (1970).