former case the α-amino group and the α-hydrogen are lost, whereas in the latter saccharopine dehydrogenase and α-aminoadipic semialdehyde dehydrogenase are involved and the ε-amino group is lost. Plant enzymes concerned with the catabolism of lysine have not yet been demonstrated. Saccharopine dehydrogenase has been isolated from yeast [9] and the results now presented indicate that it might be present in higher plants.

EXPERIMENTAL

Plant material. The species listed in Table 1 were grown in the Botanical Garden of the Royal Veterinary and Agricultural University, Copenhagen. Green parts of the plants, grown outdoors, were harvested in the autumn and kept at −20° until isolation was performed. The plant material (25 g) was homogenized in H_2O (200 ml) at 0–4°C and centrifuged (1.5 hr, 2°, 12000 *g*). The supernatant was taken to dryness by lyophilization, and isolation and semiquantitative determination of **1** and **2** were performed as previously described [1], except that the column of Dowex 1 (× 8, 200–400 mesh, AcO^-, 0.9 × 50 cm) was eluted with H_2O (fractions 1–30) and then with 0.2 N HOAc. **1** and **2** appeared in fractions 35–45, **2** just before **1**, glutamic acid occurred in fractions 46–50. Transformation of **2** into **3** was performed with 70% MeOH at 80°.

MS were obtained at 70 eV on an AEI MS 3074 mass spectrometer. **1** gave the following pattern: *m/e* 144, 143, 116, 99, 98 (base peak), 70, 55. The trimethylsilyl derivative of **3** produced from **2** gave the following fragmentation pattern: M^+474, *m/e* 459, 431, 387, 369, 357 (base peak), 341, 314, 285, 274, 267, 240, 218.

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MASS FRAGMENTOGRAPHY OF CORIOSE IN *CORIARIA* SPECIES

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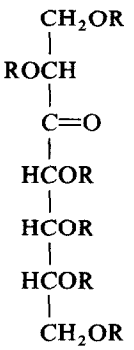
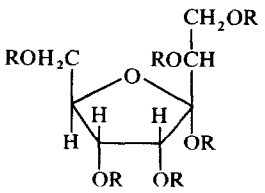
Key Word Index—*Coriaria japonica*; *C. nepalensis*; *C. intermedia*; *C. ruscifolia*; *C. thymifolia*; Coriariaceae; coriose; sedo-heptulose; *manno*-heptulose; trimethylsilyl ether; mass fragmentography.

The structure of coriose (**1**) isolated from *Coriaria japonica* has been reported [1]. Trimethylsilylation of α-coriofuranose (**1a**) gives a mixture of TMS derivatives of α-furanose (**1b**) and of the open-chain form, **1c** [2, 3].



1 R=H
1c R=TMS



1a R=H
1b R=TMS

The following plant samples were examined in the present study: (i) *C. japonica* A. Gray, collected on Mt. Hira, Shiga-ken, Japan; (ii) *C. nepalensis* Wall., collected in Bhutan between Tinlegang and Gon Chungang; (iii) *C. intermedia* Matsum., collected in Taiwan; (iv) *C. ruscifolia* L., collected in Chile, on the Pacific coast near El Mirador, Prov. Valdivia; (v) *C. thymifolia* H.B.K., collected in Peru, near the pass between Olmos and Pagua, Prov. Lam Bayaque.

A leaf (samples i–iv) or several leaves (sample v) were sufficient for the analysis. Dried leaf (samples ii–v), or both fresh and dried leaf (sample i) were extracted with boiling water, the solution was evaporated *in vacuo*, and the residue was extracted with boiling MeOH. The MeOH solution was evaporated, and the residue was trimethylsilylated with a mixture of Me_3SiCl, $Me_3SiNHSiMe_3$, and C_6H_5N (1:2:10). The mass fragmentography (MF) [4] was carried out using a 2% OV-17 GLC column and monitoring the *m/e* 437 and *m/e* 408 ions which are strongly exhibited in the mass spectra of **1b** and **1c**, respectively. MF was performed initially with *C. japonica* in which the presence of **1** had been confirmed. The gas chromatogram (detector, FID) and the MF chart in Fig. 1 represent the pattern of trimethylsilylated **1** in *Coriaria* species. Coriose was detectable when several picograms were included in an injected sample solution. All of the *Coriaria* species examined showed the presence of **1** in an analogous way as with *C. japonica*, by the MF peaks of **1b** and **1c**, which should be present in the final product of trimethylsilylation of **1** [2, 3].

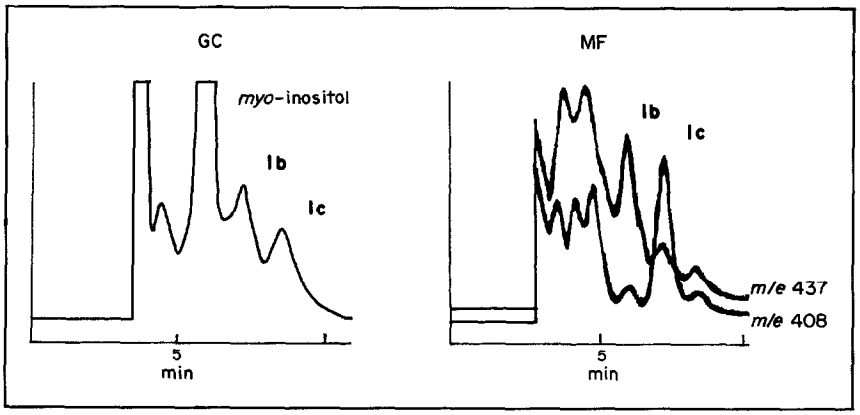


Fig. 1. Gas chromatogram and mass fragmentogram of the trimethylsilylated extract of *C. japonica*.

Co-existence of sedoheptulose and *manno*-heptulose was also proved by MF using the *m/e* 539 ion which is strongly exhibited in the mass spectra of these 2-heptuloses.

The PC data (*n*-BuOH–C_6H_5N–H_2O, 6:4:3; coloured with orcinol–Cl_3CCOOH), obtained after removing fermentable sugars from larger amounts of the extracts of *Coriaria* species by treatment with baker's yeast, were in accord with the above findings.

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D-BORNESITOL ACETATE IN *ACER PSEUDOPLATANUS*

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Key Word Index—*Acer pseudoplatanus*; Aceraceae; sycamore; cyclitol, D-bornesitol acetate.

INTRODUCTION

A number of esters of organic acids with *myo*-inositol have been detected in higher plants, such as IAA esters in seeds [1] the acetic acid ester in some Campanulaceae [2] and an ester of *p*-coumaric acid in gymnosperms [3]. During biosynthetic studies [4] leaves of *Acer pseudoplatanus* were found to convert labelled D-bornesitol to L-quebrachitol, and a further unknown compound, which released D-bornesitol on alkaline hydrolysis [5]. Our purpose in this report is to describe the identification of this compound as D-bornesitol acetate in leaves of *A. pseudoplatanus*.

RESULTS AND DISCUSSION

Since the unknown compound was labelled only in the D-bornesitol moiety of the molecule after feeding D-bornesitol [^{14}C] to *Acer* leaves, a different approach towards the elucidation of its structure had to be taken. To obtain the unknown derivative of D-bornesitol uniformly labelled, *Acer* leaves were subjected to photo-