Chemical Constituents from Hepaticae, XVIII

Low-boiling Constituents in the Essential Oil of the Liverwort, Bazzania pompeana (Lac.) M. Mitt, which is a leafy liverwort belonging to the Lepidiozaceae, in connecting with previous papers on a high-boiling constituents, that is sesquiterpenoids, in this essential oil 3–7.

The essential oil obtained by steam distillation of the plant was fractionated to separate a low-boiling fraction, which exhibited five peak on gas chromatogram. These constituents were identified as β-pinene, γ-terpinene, 3-octanone, camphor and thujanol by measuring mass spectra with GC-MS and gas chromatographic comparison with authentic samples. The relative contents of these components were as listed in Table.

This is the first instance in which these low-boiling constituents were detected in liverworts.

Experimental

Essential oil of the liverwort

The liverwort, B. pompeana, was collected at mountains within easy reach of Hiroshima Prefecture in June 1971, and the whole plant was distilled with steam to obtain an essential oil. The aqueous distillate was also extracted with ethyl ether and the extract, after evaporation of the solvent, was added to the essential oil. The essential oil thus obtained, αF +34.7°, nD 1.5073, d25° 0.9397, was fractionated through a spinning distillation column at reduced pressure of 30 mmHg to give a low-boiling fraction distilled at 70–90°C in a yield of about 3% to the essential oil, whose constituents were examined.

Identification of β-pinene, γ-terpinene, 3-octanone, camphor and thujanol

The analysis of the fraction was carried out by using a combined apparatus of a mass spectrometer and a gas chromatograph in connection with a separation column packed with 3% Silicon SE-30 on Diasolid L. β-Pinene, γ-terpinene, 3-octanone, camphor and thujanol were identified on the basis of agreement of the mass spectra with authentic ones. The identity of these compounds was further confirmed in admixing with authentic samples on gas chromatography with two separation columns of 3% SE-30 on Diasolid L and 3% PEG 6000 on Diasolid L.
Requests for reprints should be sent to Dr. A. Matsuo, Department of Chemistry, Faculty of Science, Hiroshima University, Hiroshima 730, Japan.

2 K. Müller, Hoppe-Seyler's Z. Physiol. Chem. 45, 299 [1905].
4 S. Hayashi and A. Matsuo, ibid. 26, 347 [1970].