

BRIEF COMMUNICATIONS

COMPONENTS OF PLANTS OF THE FAMILY EMPETRACEAE.

I. HYDROCARBONS FROM *Empetrum nigrum*

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Empetrum nigrum L. (black crowberry) – a highly ramose bush growing in the Altai, in the European part of the country, in Western and Eastern Siberia, and in the Far East – is widely used in folk medicine for the treatment of epilepsy and paralysis and as a sedative and stimulating agent, and in Tibetan medicine in anthrax and diseases of the liver and kidneys [1]. The chemical composition of this plant has been studied inadequately. It is known [2, 3] that it contains quercetin, kaempferol, rutin, isoquercitrin, and benzoic, ursolic, caffeic, and ascorbic acids. The high biological activity of lipophilic extracts of the black crowberry impelled us to investigate them.

The epigeal part of the plant was collected in the period of incipient budding in the Kosh-Agach region of the Gorno-Altai Autonomous Region in July of 1984 and 1985. The air-dried comminuted raw material was extracted five times with boiling hexane and the dry residue was treated successively with ethanol and, to eliminate pigments, a small amount of diethyl ether, until a greyish-white mass (yield 1%) was formed. The combined substances obtained were separated by column chromatography on silica gel L [Czechoslovakia (100-160 μ)] with elution by hexane. After the hexane had been driven off, a lustrous waxy mass was obtained with mp 62-64°C (yield 0.2% on the air-dried raw material).

The IR spectrum of this fraction ($\nu_{\text{max}}^{\text{KBr}}$, 1490, 2870, 2950 cm^{-1}) was characteristic for hydrocarbons. In the PMR spectrum (60 MHz, CDCl_3 [sic], δ , ppm, 0 – HMDS) signals with chemical shifts of 0.66 (CH_3) and 1.05 (CH_2) confirmed that the fraction isolated belonged to the class of hydrocarbons [4].

The components of the hydrocarbon fraction were investigated by chromat-mass spectrometry on a Nermag R 10-10C instrument. A quartz capillary column (Chrompac CP sil-5, 0.22 mm \times 26 m) was used for separation. Analysis showed that the hydrocarbon fraction consists of a mixture of normal paraffins with from 23 to 33 carbon atoms in the molecule and with a predominance of compounds having odd numbers of carbon atoms.

The absence from the mass spectrum of the $M^+ - 15$ fragments and the substantial disturbances of the monotonic nature of the decrease in the intensities of the ion peaks indicated the absence of branchings and isomerization in the hydrocarbon molecules [5]. The molecular ions were detected in the mass spectra of all the components of the mixture, which considerably facilitated their identification and increased its reliability. The quantitative composition of the paraffins of the black crowberry (mole %) was: C_{23} , 0.24; C_{24} , 0.19; C_{25} , 0.35; C_{26} , 0.21; C_{27} , 1.32; C_{28} , 0.24; C_{29} , 23.24; C_{30} , 0.95; C_{31} , 53.51; C_{32} , 1.11; C_{33} , 18.64.

LITERATURE CITED

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