UNSAPONIFIABLE SUBSTANCES OF THE SEED OIL OF Hibiscus syriacus

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We have previously studied the fatty oil of the seeds of Hibiscus syriacus (rose of Sharon; shrub althea), family Malvaceae [1]. The present paper gives the results of an investigation of the unsaponifiable substances isolated from this oil. The amounts of biologically active and antioxidant tocopherols in the unsaponifiables were determined by the method of Devyatnin [2] (157.77 and 49.24 mg %, respectively). The total tocopherols were extracted by column chromatography on diatomite [3]. They were separated in a thin layer (Silufol) in the benzene–ethanol (98:2) system. A mixture of 0.5% bipyridyl and 0.2% $FeCl_3$ in methanol was used as the chromogenic agent. As markers we used α-, δ-, and γ-tocopherols isolated from soybean oil. In the thin layer two spots appeared with R_f 0.56 (α-tocopherol) and 0.34 (mixture of β- and δ-tocopherols). The presence of β-tocopherol was confirmed by its UV spectrum (λ 285.6 nm in ethanol) ([12], p. 261). The presence of δ-tocopherol was shown by the appearance of a blue spot when a parallel chromatogram was sprayed with a 2% solution of Na_2CO_3 and diazotized O-dianisidine [4].

The unsaponifiables were found to contain free (0.27%) and bound (0.24%) sterols [5]. The free sterols, after recrystallization from methanol, had mp 135°C. Their mass spectrum showed the peaks of molecular ions with m/e 414 and 400, which are characteristic for β-sitosterol and campesterol [6]. The composition of the sterol fraction was confirmed by TLC [7].

The pigments were isolated on a column of Al_2O_3 and were identified by their UV spectra. In this way we found β-carotene (λ_{max} 452, 484 nm, petroleum ether) [8], 3,4-dihydroxy-β-carotene (λ_{max} 424, 452, 483 nm, petroleum ether), and α-carotene (λ_{max} 432, 457, 480 nm, chloroform) [9]; α- and β-carotenes have been found in the leaves and roots of this plant [10].

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