PHENOL DERIVATIVES FROM THE ROOTS OF Ferula persica

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By extraction with acetone, the roots of Persian giant fennel Ferula persica Willd., fam. Apiaceae, gathered during the fruit-ripening period in Gobustan (Azerbaidzhan), have yielded a resin from which four substances have been isolated by the chromatography and rechromatography of the individual fractions, using various absorbents (alumina, silica gel).

Sustance (I), composition $C_{17}H_{22}O_3$, mp 164-166°C (from aqueous ethanol) had in its IR spectrum the absorption bands of a hydroxy group (3390 cm^{-1}), of the CO group of an α,β-unsaturated ester (1690, 1290 cm^{-1}), and of the C=C bonds of a benzene ring (1615, 1600, 1525 cm^{-1}). A direct comparison of the IR and NMR spectra of substance (I) and those of ℓ-chimgin showed their identity.

Substance (II), with the composition $C_{18}H_{24}O_4$, mp 84-86°C (from aqueous ethanol), had in its IR spectrum the bands of an OH group (3400 cm^{-1}) of the CO group of an β-unsaturated ester (1695, 1290 cm^{-1}) and of the C=C bonds of a benzene ring (1610, 1600, 1522 cm^{-1}).

A comparison of the NMR spectra of substances (I) and (II) clearly showed that (II) differed from (I) by the presence of an additional methoxy group. A comparison of the IR and NMR spectra of compound (II) and of ℓ-chimganin [2, 3] showed their identity.

In the region of characteristic frequencies of its IR spectrum, substance (III), with the composition $C_{15}H_{16}O_3$, mp 80-81°C, had the bands of the CO group of an α,β-unsaturated δ-lactone and of the C=C bonds of a benzene ring.

A direct comparison of IR and NMR spectra identified substance (III) as osthole [4, 5].

By means of its melting point (147-148°C) and IR spectrum, substance (IV) was identified as β-sitosterol.

Thus, Ferula persica contains compounds analogous to those present in other species from the Peucedanoides section — F. dissecta, F. lapidosa, and F. tschimganica.

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