

BRIEF COMMUNICATIONS

PHENOLIC CARBOXYLIC ACIDS AND β -SITOSTEROL FROM THE TEA PLANT

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The freshly comminuted leaves of the tea plant (1 kg) grown in Georgia (Ingirskii Tea Sovkhoz [Communal Farm]) were extracted with 60% methanol with heating. The extract was concentrated to small volume and was mixed with Sephadex G-25 (coarse fraction). After swelling, the Sephadex was transferred to a column (d 7 cm) and was washed successively with hexane (fraction I), the organic layer of a mixture of petroleum ether, chloroform, and water (3:1:1) (fraction II), and with ethyl ether-water (5:1) (fraction III). The phenolicarboxylic acids were eluted by the ether together with free flavonol aglycones [1]. The residue (1 g) from fraction III was dissolved in 15 ml of the organic layer of the chloroform-butanol-water (5:1:1) system, mixed with 4 g of Sephadex LH-20, and left for an hour for the gel to swell. In parallel, 30 g of Sephadex LH-20 was added to 300 ml of the organic layer of the above-mentioned system, and after an hour it was transferred to a column (d 3 cm), washed with 200 ml of the aqueous layer of the same system, and the Sephadex swollen in the solution of the material under investigation was added to it. The elution of the substances was performed with the aqueous layer of the system, 100-ml fractions of the eluate being collected. The fractions having the same substance composition were combined, concentrated, and treated with an equal amount of ethyl ether. The ethereal extracts were dried and concentrated, and the residue was crystallized from methanol. This gave two individual substances.

Substance 1, composition $C_7H_6O_5$, was identified by its physicochemical properties as gallic acid [2].

Substance 2 had the composition $C_7H_6O_4$, mp 196-198°C, white acicular crystals. On PC, the compound had the same R_f value as an authentic sample of protocatechuic acid [BAW (4:1:5) system]. The information obtained gives ground for considering that this substance is protocatechuic acid [3].

Fraction I, containing fatty acids, was concentrated to a dry residue; this residue (2 g) was dissolved in 5 ml of chloroform, 3 g of Sephadex LH-20 was added and was left for 2 h, and then 5 ml of 90% ethanol was added. In parallel, 35 g of the Sephadex was placed in 90% ethanol for swelling, and the Sephadex swollen in the solution of the material under investigation was added. The substances were eluted with hexane, 50-ml fractions being collected. After the evaporation of the hexane from fractions 31-37, β -sitosterol crystallized out, as was confirmed by a comparison of IR spectra [4, 5].

This is the first time that β -sitosterol has been isolated from the tea plant.

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