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BRIEF COMMUNICATIONS

NEUTRAL CONSTITUENTS FROM LEAVES OF PLANTS OF THE FAMILY MALVACEAE. I. *Abutilon theophrasti*

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The genus *Abutilon* in the family Malvaceae includes about 160 species. One species, *A. theophrasti*, grows in the Republic of Uzbekistan and is distributed in Central Asia and the European part of the CIS and in the Caucases, Iran, India, China, Japan, north Africa, etc.

Leaves, roots, and flowers of *A. theophrasti* are used in folk medicine as a substitute for *Althea* as an expectorant and emollient [1].

The chemical composition of *A. theophrasti* includes 2-3% tanning agents. Leaves contain 24.3 mg% γ-carotene, 180–200 mg% vitamin C, and ~0.28% of the air-dried mass of rubber-like substances [2]. Flavonoids [3] and glycosides [4] were reported. Lipophilic components have not been reported.

We studied substances extracted from *A. theophrasti* leaves collected in 2009 in Samarkand Oblast.

Leaves that were dried in the shade (10 g) were ground and extracted with EtOH (96%, 100 mL). The extract was evaporated to dryness in a rotary evaporator (2.4 g yield). The resulting resinous (oily) mass was dissolved in petroleum ether (PE) and chromatographed over silica gel with elution by hexane and hexane:$CHCl_3$ mixtures of increasing polarity. Fractions were monitored by TLC. Identical fractions were combined. Crystallization from hexane isolated four compounds and a homogeneous oily fraction.

Compound **1**, $C_{26}H_{53}OH$, white crystals, mp 78–79°C. Its physicochemical and spectral properties were identical to those of hexacosanol.

Compound **2**, $C_{29}H_{59}OH$, white crystals, mp 80–81°C. Its composition and spectral properties were identical to those of nonacosanol.

Compound **3**, $C_{29}H_{50}O$, white needle-like crystals, mp 135–136°C. Its IR, PMR, and mass spectra corresponded to sitosterol [5].

Compound **4**, $C_{29}H_{48}O$, white needle-like crystals, mp 168–169°C. Its IR and PMR spectra were identical to those of stigmasterol [6].

The light-yellow oily substance was homogeneous according to TLC and was identified by its IR and PMR spectra and comparison with standards as polyprenols [7, 8], which are known to occur in nature as mixtures of isoprenologs. These are natural precursors of dolichols, which play an important role in the protection of cell membranes, the stabilization of cell proteins, and the maintenance of the immune system [9, 10]. The qualitative and quantitative compositions of the polyprenol fraction were studied using HPLC (Millichrom) with UV detection at 210 nm analogously to polyprenols from sea buckthorn [7]. It was found that *A. theophrasti* polyprenols, like other representatives of the family Malvaceae, comprised n = 9–13 isoprene units, the percent content of which was 5.9:24.0:45.4:22.6:2.6, respectively, with the deca-, undeca-, and dodecaprenols dominating. The content of the others was insignificant. Additional purification of the polyprenol fraction identified impurities of squalene, α-tocopherol, and phytol by using TLC and their authentic samples. The TLC results were verified using GC–MS.

All listed compounds were isolated from *A. theophrasti* for the first time.

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