

NEUTRAL COMPOUNDS FROM LEAVES OF PLANTS OF THE FAMILY *Malvaceae*. II. *Hibiscus tronum*^a

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Six species of plants of the family *Malvaceae* (*Gossypium* L., *Althaea* L., *Alcea* L., *Malva* L., *Hibiscus* L., and *Abutilon* M.) grow in the Republic of Uzbekistan.

Hibiscus tronum is an herbaceous oil-bearing, fibrous, and food plant that is distributed in the Amudarya valley and delta and on fields. The infusion of leaves is used in folk medicine as a cholegogic agent [1].

Plant polyprenols (PPs) are known to have potential for creating drugs with various types (anti-ulcer, immunotropic, antiviral, etc.) activities [2, 3]. Drugs for agriculture (the biostimulator Uchkun, Raststim, etc.), animal husbandry (Fosprenyl, Prenolakt, Gamapren, etc.), and other economic sectors were created based on them [3]. Therefore, the identification of sources of PPs and other isoprenoids from local plant raw material of Uzbekistan in order to produce novel domestic drugs is especially interesting. Plants of the family *Malvaceae* are promising because their leaves contain a relatively high content of PPs [2, 4–6].

We reported previously on the neutral components from the aerial part of the plant *Abutilon* [7]. Herein we present results from a study of the chemical composition of total extracted substances from leaves of *Hibiscus tronum* collected during fruiting (Aug. 21, 2010) in Samarkand Oblast. Extraction of dried leaves (8.8% moisture) by EtOH (96%) and subsequent alkaline hydrolysis of the extract isolated total neutral substances (NS). Because the principal active substances of the aforementioned leaves were PPs, we decided to study first the component composition of the PP fraction.

The PP composition and content were determined in fractions enriched in PPs that were obtained by column chromatography over silica gel of the total NS. The total (1.0 g) was separated using hexane with an increasing gradient (from 0–30%) of Et₂O. Fractions (20 mL) were collected and combined according to results of TLC over Silufol and Sorbfil plates to afford 26 fractions. Fraction 8 contained PPs of 90.5% purity (HPLC). IR and PMR spectral data coincided with those of cotton PPs [8]. Table 1 presents the PP component ratio in total NS and in PP fraction 8 from *H. tronum* leaves.

TABLE 1. Qualitative and Quantitative Compositions of Polyphenols from Leaves of *H. tronum* in Total NS and Purified PP Fraction, %, HPLC

Sample	P ₉	P ₁₀	P ₁₁	P ₁₂	P ₁₃	P ₁₄	Total PPs content in sample
Standard, cotton PPs	6.22	12.13	47.67	26.45	6.48	1.05	94.5
NS of <i>Hibiscus tronum</i>	Tr.	9.5	39.0	42.7	7.1	1.7	20.2
PP fractions of <i>Hibiscus tronum</i>	1.9	3.0	39.6	44.3	10.6	0.6	90.5

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Other NS from *H. trorum* were identified using GC—MS as hydrocarbons and higher alcohols and ketones. The data are given below (without accounting for PPs):

<i>Component</i>	<i>Amt. of NS wt., %</i>	<i>Component</i>	<i>Amt. of NS wt., %</i>
Tetracosane	0.74	Hexahydrofarnesylacetone	6.05
Eicosane	1.16	Cholestan-3-ol	9.59
Tetracosanol	9.95	α -Tocopherol	0.79
Pentadecanone	6.05	β -Sitosterol	6.95
Phytol	43.15	Unidentified substances	13.72.
Isophytol	1.85		

It can be seen from the results that hydrocarbons; hexahydrofarnesylacetone, an isoprenoid ketone; phytol, a diterpene alcohol; α -tocopherol; and sterols were present in total NS in addition to PPs. Compounds were identified by comparison of their retention times with those of known samples and comparison of full experimental mass spectral data with mass spectra in the NIST 02 MS database included in the data processing system of the Agilent G1701AA Chemstation.

Thus, the principal components of total NS were studied using HPLC and GC—MS. The principal compounds of *H. trorum* NS were phytol and PP alcohols and sterols, which were isolated from this plant for the first time.

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