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Growing Datura Stramonium L. Alkaloids in Fergana Region

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Common stramonium - *Daturastramonium*, alligatory - belongs to the family Solanaceae. *Daturastramonium* is an annual herb with an unpleasant odor, reaching a height of 100, sometimes 120 cm. Stems erect, hairless, branched. The leaves are simple, ovoid, with a sharp tip, notched, deeply carved, banded, dark green, hairless (hairy at the top of the stem), arranged in a row on the stem. The flowers are large, solitary on the stem. The fruit is ovoid, hard and covered with thick thorns, erect, with four lobes. The seeds are black, pale, round kidney-shaped, flat, with small pits on the upper side. *Stramonium* blooms from June to autumn, the fruits ripen from July. *Daturastramonium* grows in populated areas, roadsides, waterways, melons.

It grows mainly in Ukraine, Belarus, Moldova, Russia, the southern and central regions of Europe, Crimea, the Caucasus, Central Asia, the Baltic States, and to a lesser extent in Western Siberia and the Far East [1].

Daturastramonium was first introduced by academician S.Yu. Yunusov studied by researchers of the Institute of Plant Materials of the Russian Academy of Sciences [2,3].

Our object is to study the alkaloids of the plant *Daturastramonium* collected from around Uzbekistan district of Fergana region.

The amount of alkaloids in the growing season in different parts of the plant *Daturastramonium* collected from around the district of Uzbekistan was checked. As a result of the inspection, it was found that the surface of the plant has a high content of alkaloids during flowering. (Table 1).

Amount of alkaloids in various parts of the *Daturastramonium* plant.

Table 1.

№	Plant member	Vegetation period	Alkaloids amount
1	Leaf	July	0.40%
2	Stalk	July	0.3%
3	Root	July	3.7%
4	Seeds	August	0.32%
5	Surface	Flowering period	0.44%

As a result of dividing the chloroform part of the plant alkaloids in a silica gel column, 8 alkaloids (hyostiamine, tropin, atropine, apoatropin, hyostin, belladonnin, apogiosin, 6-oxygiosiamine) were isolated (Table 2).

Of these, 6 alkaloids were identified by their actual samples. The structure of 2 alkaloids - giosiamine and 6-oxygiosiamine was proved by physicochemical methods.

Alkaloids of the plant *Daturastramonium* L.

(Table 2)

№	Naming Alkaloids	Chemical composition	Liquid Temperature
1	Giossiamin	$C_{17}H_{23}NO_3$	109-110
2	Tropin	$C_8H_{15}NO$	63-64
3	Atropin	$C_{17}H_{23}NO_3$	115-116
4	Giossin	$C_{17}H_{21}NO_4$	Moysimon
5	Belladonnin	$C_{34}H_{42}N_2O_4$	128-129
6	Apoatropin	$C_{17}H_{21}NO_2$	60-61



7	Apogioistin	C ₁₇ H ₁₉ NO ₃	79-80
8	6-Oksigiostisiamin	C ₁₇ H ₂₁ NO ₄	61-62

Experiment section

The study consists of the study of alkaloids of the plant *Daturastramonium*, collected from around Uzbekistan district of Fergana region. Growing in the vicinity of Uzbekistan district of Fergana region, the plant was harvested during the flowering period and thoroughly dried and crushed, the surface of the plant was moistened with 8% ammonia solution. The plant was soaked for two hours, and chloroform extraction was continued 10 times, until the plant extract did not react negatively to the alkaloid. The resulting chloroform extracts were diluted, from which the alkaloids were obtained into a 10% solution of sulfuric acid (until the acidic solution reacted to the alkaloids). The acidic solution was filtered and rinsed with ether. The solution was then treated with 25% ammonia solution in the presence of ether until the medium was alkaline (pH = 9). The alkaloids were extracted with chloroform from the resulting alkaline solution. Chloroform solutions are dried in anhydrous potassium carbonate and the solvents are expelled. At the end of the extraction, a set of alkaloids was isolated. The amount of alkaloid mixture is 0.55% of dry plant mass. The chloroform fraction was divided into a mixture of alkaloids in a silica gel column by chromatography. The column was washed with a mixture of solvents in the following proportions of chloroform-methanol 99: 1, 98: 2, 50: 1, 20: 1, 15: 1, 10: 1, 5: 1 and 4: 1.

Giostisiamin. Chloroform-methanol (99: 1) was 2-5 of the eluate similar fractions were added. Solvents were removed from the fractions and recycled chromatographed on a silica gel column. The column was washed with a mixture of solvents chloroform-methanol (98: 2). Fractions of 8-10 ml were collected. Fractions 10-19 were combined and crystallized in benzene. As a result, a crystalline substance with a liquids temperature of 109-110 0 C, Rf = 0.18 (chloroform-methanol, 9: 1) was obtained.

Tropin. 5-10 similar fractions of chloroform-methanol (98: 2) eluate were combined. Solvents were removed from the fractions and re-chromatographed on a silica gel column. The column was washed with a mixture of solvents chloroform-methanol (50-1), fractions of 10-15 ml were collected. Fractions 6-17 were added and crystallized from benzene-ethanol. As a result, a crystalline substance with a liquidus temperature of 63-64 0 C, Rf = 0.25 (chloroform-methanol, 9: 1) was obtained.

Atropine. The residual solution isolated from giostisiamine and tropine was combined and chromatographed on a silica gel column using the chloroform-methanol (98-2) system as an eluate. Fractions were collected from 10-15 ml. 10-15 similar fractions were added and re-chromatographed on a silica gel column. As a result, a crystalline substance with a liquids temperature of 115-116 0 C, Rf = 0.27 (chloroform-methanol, 9: 1) was obtained.

Giostsin. Chloroform-methanol (50: 1) was 2-15 in the mixture similar fractions were combined and chromatographed on a silica gel column. The column was washed with a mixture of chloroform-methanol (20: 1) and fractions were collected in 10-15 ml. Similar fractions from 16 to 25 were added and re-chromatographed on a silica gel column. As a result, an oily substance with Rf = 0.35 (chloroform-methanol, 9: 1) was isolated.

Belladonnin. Chloroform-methanol (20: 1) 4-16 similar fractions of the mixture were combined and crystallized from acetone. As a result, a crystalline substance with Rf = 0.38 (chloroform-methanol, 9: 1) with a melting point of 128-129 0 C was obtained.

Apoatropin. The residual solution of giostsin was combined and chromatographed on a silica gel column using a chloroform-methanol (20: 1) system as an eluate. Similar fractions 4-9 were added and crystallized from acetone. As a result, a substance with a liquefaction temperature of 60-610C, Rf = 0.29 (chloroform-methanol, 9: 1) was isolated.

6-Oxygiostisiamine. Chloroform-methanol (20: 1) 5-10 similar fractions of eluate were added, the solvents were removed and the remaining residue was chromatographed on a silica gel column. The column was washed with chloroform-methanol (10: 1) systemic eluate. Fractions were collected from 8-10 ml. 12-16 fractions were combined and crystallized from an alcohol-acetone mixture. As a result, a substance with a liquefaction temperature of 61-62 0 C, Rf = 0.45 (chloroform-methanol, 9: 1) was isolated.

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