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Methods of Growing Some Medicinal Plant Species in the Condition of Introduction

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ABSTRACT

In the article, there is some information about the importance of medicinal plants, which are grown in condition of introduction, the methods of cultivating, biomorphological peculiarities of two Lycium and Stachys groups and biochemical structures.

KEYWORDS: Physiological-Biochemical, *Lycium And Stachys*, Chromatography, Plants, Protein, Alkaloid, Essential Oil, Saponin, Glicosyde, Flavonoid.

ARTICLE DETAILS

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RELEVANCE

In order to grow introduced medicinal plant species,firstly,it is vital to study their bioecological and physiological-biochemical properties and to develop scientifically based ways of their reproduction.

Medicinal introduced plants can be planted and propagated as needed, but there are certain difficulties in propagating naturalized plants.

Hence, the issue of introducing plant species requires a special attitude. Thus, cultivating naturalized species through agrocenosis plays a crucial role.

Introduction – the process that any non-native species arrived and introduced to a new area by human activity (latin introduction - enter). A characteristic feature of world agricultural development is the transfer of agricultural crops from one region to another.

In most cases, during the introduction process, it is difficult for studied plants to adapt to the new soil and climatic conditions. The reason why changes in plants under the influence of environmental factors depends on their reaction rates. Generally, plants can adapt to similar climatic factors, but, even then the adaptation characteristics of different varieties are different.

In the early stages of introduction, the fundamental researches about the biology of evolution of new plants, photosynthetic activity and biochemical structure of new plants and the mechanisms of their adaptation to new territories are essential.

It is known from scientific literatures that the species *Lycium and Stachys* differ from other plants with their medicinal properties[1]. For this reason, investigating these group of species carefully, introducing the rare, herbal plant species and developing the new methods of breeding are theoretically and practically important.

RESULTS AND DISCUSSIONS

The species Lycium and Stachys are bred through seed and cutting.

Field experiments were carried out at different times at different planting schemes and depths. In this case, the experimental fields were ploughed to a depth of 25 cm before sowing. Experiments were sown in distance 60x10, 60x15, 60x20, 60x25, 60x30 cm schemes on an area of 30m². To determine the optimal time for sowing the seeds, each plant type was planted in three repetitions at different times: autumn, winter and spring at depths of 0.5 cm to 3 cm.

In addition, it is recommended to plant during summer the investigated seedlings in distance 5-8 cm (for stachys species) 30-50 cm (for lycium species).

Seeds of Lycium species were brought from Syrdarya region. The average size of the seeds is about 1.0-2.0 mm. The average weight of 1000 seeds is 0.98 g.

Seed germination in the laboratory was about 60%.

In the field, the experiments were conducted in 2 types of indoor (greenhouse) and open areas. Germination of

seeds in indoor conditions takes an average of 18 days, in the open field - 24 days.

Average indication		***Lycium chinense***	***Lycium barbarum***
Number of stems	Vegetative period	53	32
	Generative period	62	-
Height of stems	Vegetative period	245	270
	Generative period	315	-

Stachys species thrive especially well in open sunny areas, with some plant humus or completely rotted manure, on soft soils. Due to the abundance of sunlight and low soil fertility, the leaves of the S. byzantine plant are small and slightly silvery.

In spring the first thing to care the plants is cleaning the bushes, applying a little fertilizer to soil, and irrigating normally. Frequently, when S. byzantine is used for decorating, the flower stalks are cut during the blossom period in order to keep its landscape for a long time [2].

Stachys species can be left in one place for many years, however, over time the central stem of the S. byzantine plant becomes bare, and to prevent this, and rejuvenate the bushes, previous(old) parts of the plant (twigs, bushes) are cut off and a little humus is sprinkled on it.

S. betonicaeflora, on the other hand, has the ability to naturally rejuvenate the surface after blooming and fertilization each year, forming new roots from the plant's rhizomes.Sprouted new plants will not bloom and produce seeds this year, but will remain green until late autumn. This allows to get a green mass from the surface of the plant several times.

The dry mass fertileness per hectare of S. byzantine plant formed an average of 5.8 quintals per hectare at the end of the vegetation, and the dry mass formed was 4.5 centner per hectare. The dry mass yield of S. betonicaeflora from the surface was found to be 2.5 centners per hectare on average, and the yield from the underground part was the same.

From the econd tear, it is not necessary to clean the field from weeds where S. byzantine is grown , because its rhizomes prevent the growth of weeds, and secondly, the moisture of the soil in which it grows lasts a long time. Therefore, it can grow in dry conditions for a long time.

Apart from the reproduction of the introduced medicinal plants, the study of their biochemical structure is of great importance [3]. The amount and structure of biologically active substances in plants are important factors in determining their medicinal properties.

In order to prepare medicinal preparations from the row materials of herbal plants, protein, alkaloid, essential oil, saponin, glicosyde, flavonoid and other biological active elements play a vital role.

Alkaloids and glicosydes are one of the most essentials among them. Alkaloids are substances made up of very complex organic compounds with nitrogen-fixing and alkaline properties that accumulate in various organs of plants, and these substances have specific physiological effects.

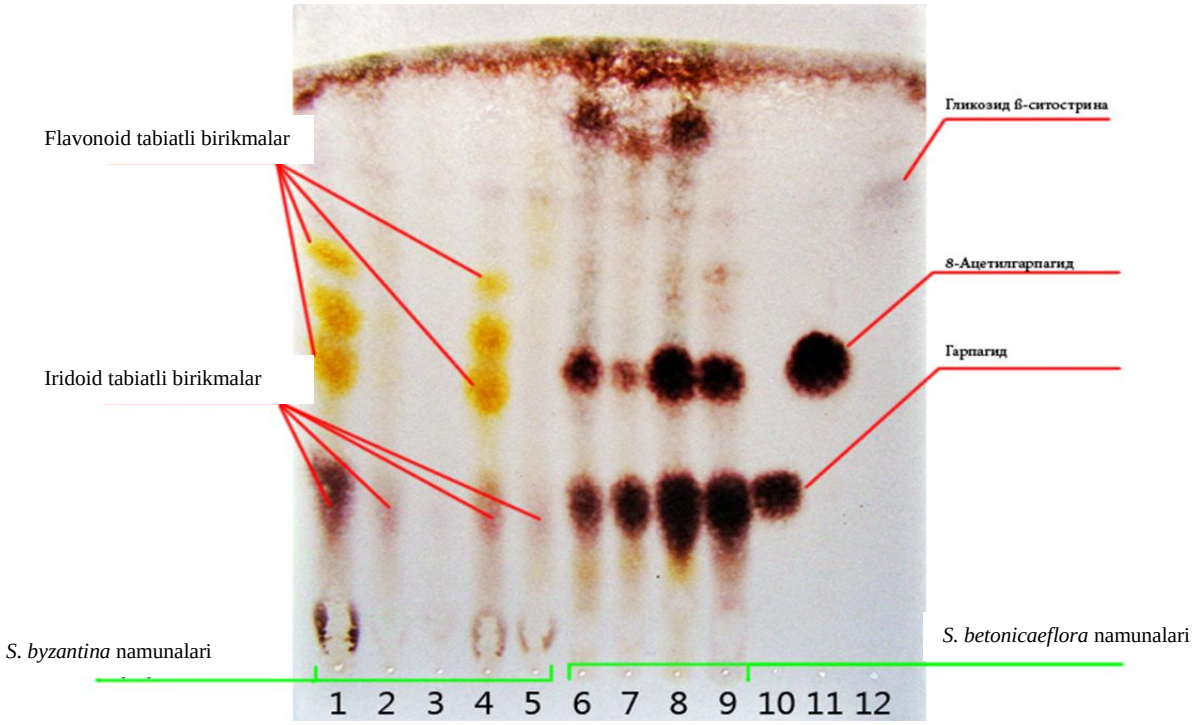
Glycosides are the most complex substances in plant organs. They are sepaeated under the influence of moisture and enzymes, that is, they are separated to sugar glycoside and sugar-free aglyucon components [4].

Studying of the investigated plant samples in collaboration with the staff of the Institute of chemistry of plant elements of the Academy of Sciences of the Republic of Uzbekistan using the method of thin-layer chromatography (TLCH) revealed a number of compounds of different chemical nature. The biochemical structure of lycium species is continued.

In the extracts of S. byzantine samples were found to contain flavonoid and iridoid compounds, as well as a deficiency of such substances in the surface of the plant during the blossom.

In the extract composition of S.betonicaeflora plant has some elemts whic is iridoid nature, can be predicted about the existence of flavonoids,but they might not be clearly appeared.

According to the thin layer chromatography (TLCH) analysis with etalon elements – β-sitosterol, β-glycoside of sitosterol, garpagid and 8-acetylgarpagid, if iridoid components of *S. betonicaeflora plant is* garpagid and 8-acetylgarpagid, iridoids of *S. byzantine plant have a different structure.* (Picture 1).



Picture 1. Comparing the extract components of two samples of *Stachys*: 1. Blossom phase of root of *S. byzantine plant* ; 2-3. Upper part of the ground (at the beginning of vegetation , blossoming period); 4.roots(at the beginning of vegetation); 5. Extracts of flowers and fruits; 6. Upper part of the ground during the blossom phase of *S. betonicaeflora plant*; 7. Holes; 8.upper part of the ground (at the beginning of vegetation); 9. Extracts of roots during blossoming period; 10. Sample of garpagid ; 11. 8- Sample of acetylgarpagid ; 12. Sample of β-sitosterol.

When we research the amount of alkoloids in under and upper ground organs of two species of Stachys group S. byzantina and *S. betonicaeflora* plants, we got the following results (tables 1,2,3).

Table 1. *The amount of* alkoloids (tertiary alkoloids) in Stachys species(chloroform fraction)

Stachys species	Parts of the plant	Mass of the plant	Amounts of alkoloids, g	In relation to the total amount of alkoloids, %
S. betonicaeflora	Upper part	12,4	0,053	0,427
	Under part	20,6	0,0207	0,100
S. byzantine	upper part	17,74	0,0262	0,147
	Under part	14,8	0,0154	0,104

Table 2. The amount of (quadruple alkoloids) alkoloids in Stachys species(butanol fraction)

Stachys species	Parts of the plant	Mass of the plant, g	Amount of alkoloids, g	In relation to the total amount of alkaloids , %
S. betonicaeflora	Upper part	12,4	0,16	1,29
	Under part	20,6	0,27	1,31
S. byzantine	Upper part	17,74	0,11	0,62
	Under part	14,8	0,11	0,74

Table 3. The amount of alkoloids (quadruple alkoloids) in Stachys species (carbohydrates-amino acids-water-soluble inorganic substances)

Stachys species	Parts of the plant	Mass of the plant, g	Amount of alkoloids, g	In relation to the total amount of alkoloids, %
S. betonicaeflora	upper part	12,4	0,89	7,17
	Under part	20,6	1,62	7,86
S. byzantine	Upper part	17,74	1,35	7,61
	Under part	14,8	0,42	2,84

CONCLUSION

Needless to say, as the substances in medicinal plant components are different, they affect differently to the function of human body.

The advantage of medicines prepared from herbal plants is that they have complex effects on numerous ailments.

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