

# **OBTAINING ENVIRONMENTALLY PURE BIOLOGICALLY ACTIVE SUBSTANCES OF ARTICHOKE PRICKLY BY REGULATION OF ITS MINERAL NUTRITION**

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Studies have found that with increasing the availability of soil with phosphorus, regardless of the forms of nitrogen fertilizers, the content of biologically active substances in medicinal plant raw material of artichoke prickly increases.

It was also revealed that further increase of soil availability by phosphorus from "medium" to "high" does not lead to a noticeable increase in the content of rutin in the raw material of artichoke prickly. As the researchers note from the whole variety of nitrogen fertilizers used when introducing urea and especially ammonium sulfate into the soil, the synthesis of biologically active substances in plant raw material of artichoke prickly is more activated than when ammonium nitrate is added.

The researchers found that in order to enhance the synthesis of routine in raw materials, and to increase its biomass, it is advisable to introduce ammonium sulfate in soil at a dose of 150 kg / ha.

**Key words:** nitrogen, phosphorus, urea, ammonium sulfate, nitrates, ecology, ammonium nitrate, cultivation, artichoke, oxidation, reduction.

**Introduction.** The main task of environmental science and medicinal plant growing of the 21st century is to develop ways of rational and proper use of fertilizers in the cultivation of agricultural, medicinal and other crops, reduce pollution of the environment with mineral fertilizers, and also to obtain ecologically pure herbal medicinal raw materials. It is known that nitrogen, phosphorus and potassium nutrition play an important role in the cultivation of agricultural, medicinal and other crops. In this regard, they are given the main attention in their cultivation [1,3,4].

**Objective.** Taking into account the above considerations, we set out to study the influence of various forms of nitrogen fertilizers, as well as the degree to which the soil is provided with phosphorus for the yield of artichoke prickly and the maintenance of rutin in its raw materials.

**Materials and methods of research.** Experimental work was carried out in 2012-2016 on the experimental lot of the Tashkent Pharmaceutical Institute.

In the aerial part of the plant, the content of routine was determined in accordance with the SP XI edition. [2] Mineral fertilizers were used in the following forms: nitrogen in the form of ammonium nitrate, urea and ammonium sulfate; phosphorus in the form of superphosphate and potassium in the form of potassium chloride.

**Results.** The results of our studies have shown that with increasing availability of soil with phosphorus, regardless of the forms of nitrogen fertilizers, the content of biologically active substances in medicinal plant raw materials of artichoke prickly grows. It was also revealed that further increase of soil availability by phosphorus from "medium" to "high" does not lead to a noticeable increase in the maintenance of rutin in the raw material of artichoke prickly. As the researchers note from the whole variety of nitrogen fertilizers used when introducing urea and especially ammonium sulfate into the soil, the synthesis of biologically active substances in plant raw material of artichoke prickly is more activated than when ammonium nitrate is added.

Table1

**The effect of various doses of ammonium sulfate on the content of rutin in various organs of artichoke prickly in% on dry matter**

№	Variant name	Buds	Flowers	Fruits	Leaves
1	Control	11.9	10.8	11.2	13.8
2	P + K (background)	14.5	12.8	15.5	16.1
3	(NH <sub>4</sub> ) <sub>2</sub> SO <sub>4</sub> 100 kg/ha	16.5	15.0	15.0	16.3
4	(NH <sub>4</sub> ) <sub>2</sub> SO <sub>4</sub> 125 kg/ha	18.1	17.8	19.0	20.2
5	(NH <sub>4</sub> ) <sub>2</sub> SO <sub>4</sub> 150 kg/ha	22.5	18.9	23.2	24.3
6	(NH <sub>4</sub> ) <sub>2</sub> SO <sub>4</sub> 200 kg/ha	23.4	21.0	23.6	24.6

Apparently, this explains the direct correlation between pH, Eh, and rH<sub>2</sub> on the one hand and the content of rutin in the raw material of artichoke prickly on the other, which occurs under the influence of mineral fertilizers (N.P.K.). Our studies have ascertained that with an increase in the dose of sulfur introduced into the soil, the content of rutin increases (Table 1). However, when ammonium sulfate is introduced in doses of 150 and 200 kg /ha, there are no significant, tangible differences between them in the rutin content. In this regard, from an ecological and economic point of view, we consider it advisable to use a sulfur-containing nitrogen fertilizer of ammonium sulphate in doses of 150 kg/ha.

**Conclusions.** Cultivation of an artichoke prickly with an average provision of soil with phosphorus ammonium sulfate, which is the best form of nitrogen fertilizer, contributing to the enhancement of the biosynthesis of rutin in medicinal plant raw materials, artichoke prickly.

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