



MINISTRY OF HIGHER EDUCATION,
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MINISTRY OF HEALTH OF
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TASHKENT
PHARMACEUTICAL
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THE ABSTRACT BOOK OF THE VI INTERNATIONAL SCIENTIFIC AND PRACTICAL CONFERENCE “MODERN PHARMACEUTICS: ACTUAL PROBLEMS AND PROSPECTS” OCTOBER 17, 2025



TASHKENT - 2025



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THE 6TH INTERNATIONAL SCIENTIFIC AND PRACTICAL
CONFERENCE "MODERN PHARMACEUTICS: ACTUAL
PROBLEMS AND PROSPECTS"
TASHKENT, OCTOBER 17, 2025

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**O'ZBEKISTON RESPUBLIKASI SOG'LIQNI SAQLASH VAZIRLIGI
TOSHKENT FARMATSEVTIKA INSTITUTI**

**THE MINISTRY OF HEALTH OF THE REPUBLIC OF UZBEKISTAN
TASHKENT PHARMACEUTICAL INSTITUTE**

**МИНИСТЕРСТВО ЗДРАВООХРАНЕНИЯ РЕСПУБЛИКИ УЗБЕКИСТАН
ТАШКЕНТСКИЙ ФАРМАЦЕВТИЧЕСКИЙ ИНСТИТУТ**

**"FARMATSEVTIKA SOHASINING BUGUNGI HOLATI: MUAMMOLAR
VA ISTIQBOLLAR"**

**MAVZUSIDAGI VI XALQARO ILMIY-AMALIY ANJUMANI MATERIALLAR
TO'PLAMI**

**ABSTRACT BOOK OF THE 6TH INTERNATIONAL SCIENTIFIC AND PRACTICAL
CONFERENCE**

**"MODERN PHARMACEUTICS: ACTUAL PROBLEMS AND
PROSPECTS"**

**МАТЕРИАЛЫ VI МЕЖДУНАРОДНОЙ НАУЧНО-ПРАКТИЧЕСКОЙ
КОНФЕРЕНЦИИ**

**«СОВРЕМЕННОЕ СОСТОЯНИЕ ФАРМАЦЕВТИЧЕСКОЙ ОТРАСЛИ:
ПРОБЛЕМЫ И ПЕРСПЕКТИВЫ»**

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**«Innovative Academy RSC»
Tashkent – 2025**



THE ROLE OF SAFFRON EXTRACT IN THE REGULATION OF THIOL STATUS INULIN OBTAINED FROM SEVERAL PLANTS ENDEMIC TO KAZAKHSTAN

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<https://doi.org/10.5281/zenodo.17340369>

Inulin is a polysaccharide extracted from the vegetative mass and roots of plants (chicory, elecampane, dandelion, etc.) and used as a dietary supplement, improving the nutritional properties of foods, as a sweetener for patients with 2nd type diabetes, and as a valuable prebiotic for the human microbiome. The polysaccharide is found in high concentrations in plant tubers and roots, where it serves as a storage function. Research by several scientists has shown that inulin is also synthesized in large quantities in the rhizomes of certain rubber-bearing plants. One such rubber-bearing plant is *Scorzonera tau-saghyz*, an endemic plant of Kazakhstan. *Scorzonera tau-saghyz* is a wild perennial subshrub, listed in the Red Book of the Republic of Kazakhstan as a rare and endemic species of *Asteraceae* family. *Scorzonera tau-saghyz*, due to its ability to synthesize rubber in its rhizomes and accumulate inulin as a secondary valuable component, is an environmentally friendly and economically promising plant species. The aim of our research was to study the dynamics of latex and inulin accumulation at different stages of tau-saghyz ontogenesis, which is important for optimizing harvesting timing and maximizing productivity. Inulin is formed in the leaves during photosynthesis and accumulates in the stems and roots of plants. Inulin crystals are grouped in the vacuoles of root parenchyma cells located near the phloem. During the extraction of secondary metabolites, inulin is extracted first, followed by latex. Our results show that the amount of inulin accumulated in the roots is several times lower than the amount of latex, calculated on a dry weight basis, and varies among 1-, 2-, and 3-year-old plants. Moreover, as with the quantitative analysis of latex, the concentration of inulin increases with the growing season, reaching maximum values at the final stage of ontogenesis (flowering and fruiting) – 33.17% latex and 4.5% inulin in the dry biomass of 3-year-old plants roots. The relative similarity of latex and inulin concentrations in the large roots of 1-year-old (31.52% and 2.1%, respectively) and 2-year-old (31.34% and 2.5%) plants indicates common pathways for the biosynthesis and degradation of these compounds. This also indicates competition for the same photoassimilation resources – fructose and glucose, which are subsequently used to synthesize polyisoprene monomers – the structural units of rubber. A proportional increase in the maximum concentrations of latex and inulin by 1.5 and 1.8 times, respectively, in comparative parameters for 2- and 3-year-old plants (47.58% and 72.70%, 1:1.5 for latex; 2.5% and 4.5%, 1:1.8 for inulin) suggests that inulin decomposes into carbohydrates, which are involved not only in the synthesis of polyisoprene but also in growth processes, in particular, in the rate of taproot growth. Excess fructose and sucrose formed during inulin degradation can be used to synthesize isopentenyl pyrophosphate, which promotes the formation of triterpenes and polyisoprene. The low inulin content but high latex content in the dry root biomass suggests that at this stage of development, inulin degradation processes predominate in root cells. Therefore, it is important to study earlier stages of the growing period, when latex and inulin quantity reach high levels, for subsequent extraction.



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Identifying this phase of vegetation requires detailed biochemical analysis, necessitating the continuation of these experiments with new goals and objectives.



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