



STUDY OF THE DYNAMICS OF ALCOHOL EXTRACTION OF *PHYSALIS* *ANGULATA*

Bayniyazov A.J.
Jumaniyazov Sh.I.
Baxtiyorov J.G.
Abduraxmanov B.A.
Sotimov G.B.
Egamova F.R.

Institute of the Chemistry of Plant Substances named after Acad. S.Yu. Yunusov, Tashkent city,
Uzbekistan

e-mail: dr.sotimov@mail.ru bayniyazov.atabek2@icloud.com

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Relevance: *Physalis angulata* (angular physalis) is an erect annual herbaceous plant of the Solanaceae family. The leaves are dark green, almost ovate, often with serrated edges. The flowers are pentagonal, pale yellow; the yellow-orange fruits are enclosed in a spherical calyx [1]. *Physalis angulata* (*P. angulata* L.) was first discovered and recorded in the flora of Libya [2]. The species may be a natural endemic of Australia or America, or its range may cover both America and Australia. At present, it is widespread and naturalized in tropical and subtropical regions throughout the world.

Perennial herbaceous plants with thick unbranched stems covered with alternate scales. The flowers are collected in spike-like clusters. Plants of this genus parasitize the roots of shrubs and semi-shrubs.

Physalis angulata is traditionally used for its antibacterial, anti-inflammatory, and analgesic properties. Various studies have also demonstrated its antimalarial, antiasthmatic, antidiabetic, antioxidant, and anticancer potential [3]. Physalin contained in this plant is being studied for its anticancer and antimicrobial activity.

From the literature, it is known that steroidal lactones (physalins) found in *Physalis angulata* have shown antitumor activity in vitro against several cancer cell lines. Physalin compounds such as physalin B, D, and F have demonstrated antibacterial activity against various bacteria, including *Staphylococcus aureus* and *Escherichia coli*. Studies confirm the plant's ability to reduce inflammation by inhibiting various inflammatory pathways.

Objective. The purpose of this study is to investigate the dynamics of alcohol extraction from *Physalis angulata*.

Materials and Methods. The dynamics of substance extraction from plant material were studied as follows: 0.5 kg of crushed raw material was loaded into seven extractors (5 L capacity each) and filled with the selected solvent until a "mirror" formed. Extraction was carried out at room temperature.

The extracts were drained sequentially at intervals of 1 hour. Thus, in the first extractor the extraction lasted 1 hour, in the second – 2 hours, in the third – 3 hours, in the fourth – 4 hours, in the fifth – 5 hours, in the sixth – 6 hours, and in the seventh – 7 hours.

After the set time, the extracts were drained, and the yield of extractive substances was determined. By analyzing the results, phase equilibrium was established depending on the soaking time during the first contact.

Results. Based on the research results, it was established that by the fifth contact the yield of extractive substances was insignificant (0.4% of the raw material mass). After three drainings, the extraction degree reached 90.3%, which is quite acceptable for the extraction stage.



Conclusions. From this, we recommend triple extraction. The required soaking time at the first phase contact is 6 hours, while at the second and third contacts phase equilibrium is reached within 4 hours.