

# Study of technological factors of the extraction process of dry extract from *Geranium collina*

<sup>1</sup>Pazylbekova Zamira Tanirbergenovna, <sup>2</sup>Mahmudjanova Komila Sultanovna

Tashkent Pharmaceutical Institute,  
100015, Oybek str.,45, Tashkent city, Uzbekistan  
E-mail: alp.lentinus@gmail.com

**Abstract:** In this article the results of study of various technologic factors of the process of dry extract obtaining from roots and rhizomes of *Geranium collina* were given. An optimal raw material grinding, extractant concentration and also hydromodul of raw material and extractant for obtaining of dry extract, containing extractive and tanning agents with the greatest output were defined.

**Key Words:** Extraction, extractant, tannin agent, ethyl alcohol, grinding degree, hydromodul of raw material and extractant.

## 1. INTRODUCTION:

One of the plants using in the future as a source of biologically active substances with anti-inflammatory and antihypoxic action is *Geranium collina*- (*Geranium collinum* Steph.) widely distributed in Uzbekistan.

Extracts are concentrated extracts from raw materials of medicinal plant allowing to obtain a complex of biologically active compounds with relatively high technological output.

Extraction of plant material has many features connecting with its cellular structure and physical, mechanical properties. Extraction of bioactive compounds from herbal raw material depends on a number of technical factors. Technological factors include: the choice of selective extractant, frequency extraction, grinding of raw material, the kinetics of extraction, hydro-module of raw material and extractant. [1]

Taking into account the aforesaid, the effect of a number of technological factors on the process of obtaining dry extract from the roots and rhizomes of *Geranium collina* was studied.

Economic indicators of production technology of biologically active substances a lot depend on the correct choice of the extractant and the conditions of the extraction process. The actuality of this process increases when working with raw source containing a complex composition of extracted substances [2].

## 2. MATERIALS AND METHODS:

The percolation method was used for obtaining of dry extract and ethyl alcohol was used as extractants in the following concentrations: 20%, 40%, 60%, 80%. Quantitative analysis of tannin agents was conducted by the method of permanganometric titration.

## 3. RESULTS AND DISCUSSIONS:

In extraction of the root and rhizome of *Geranium collina* with 40% ethanol, a noticeable increase in the yield of extractives and tannins (65.78%) was observed. A decline in the yield of extractives and tannins in the dry extract by using ethanol in concentration of 60% and 80% was observed (Figure 1).

Optimal degree of raw material grinding was 3 mm which result in the highest yield of tannins (65.1%) When using raw material shredded to 1 and 2 mm the process was accelerated, but the extract was muddy because of poor filterability of layer material and in the cleaning process were arisen some difficulties. In the extraction of large minced raw material the surface of particles contact with the solvent was small, the process was going slowly and a big consumption of solvent was needed.

The most complete extraction of active substances was achieved at the ratio of raw material and extractant 1:10 as a result of conducted experiments on investigation of raw material and extractant hydromodule.

The degree of raw materials grinding is the following technological factor. To study it the root and rhizome of *Geranium collina* were grinded in different sizes and dry extract samples were obtained. Optimal degree of fineness was selected on the basis of extractives and tannins content in the samples, the results of which are shown in table.

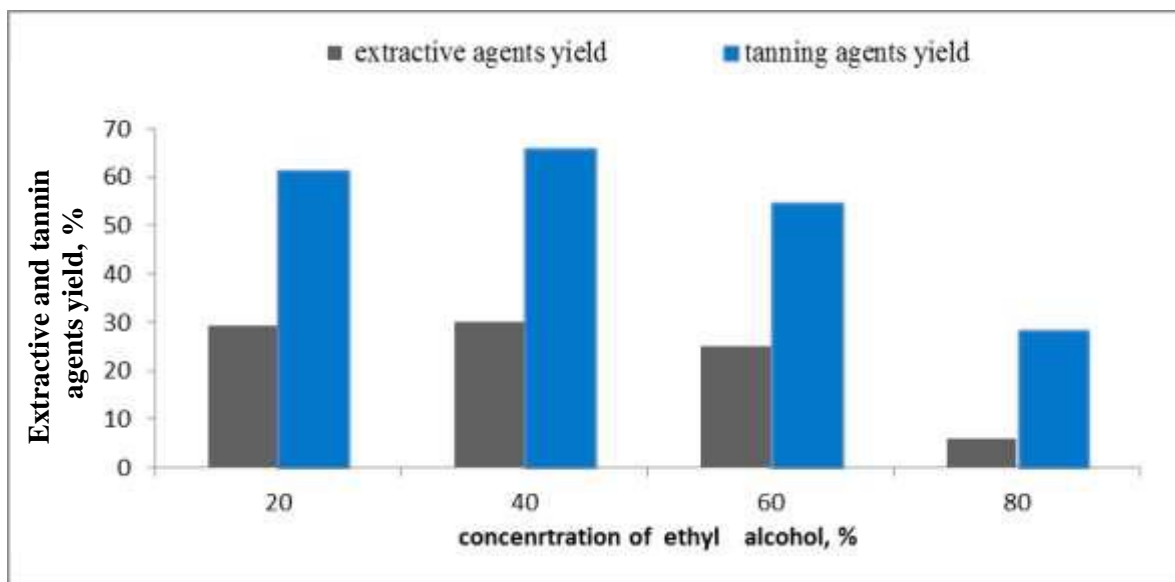


Figure 1. The influence of ethyl alcohol concentration on the yield of extractive and tannin agents.

Table 1

The content of extractives and tannins in dry extract, depending on the fineness of raw materials

| №  | Raw material fineness, mm | Yield of extractives, % | Quantity of tannins, % |
|----|---------------------------|-------------------------|------------------------|
| 1. | 7                         | 25,6                    | 54,5                   |
| 2. | 5                         | 28,0                    | 63,2                   |
| 3. | 3                         | 30,8                    | 65,1                   |
| 4. | 2                         | 30,1                    | 63,4                   |
| 5. | 1                         | 29,6                    | 60,2                   |

Then the hydro-module of raw material and extractant was studied. Their correlation was the following: 1:2, 1:4, 1:6, 1:8, 1:10 and 1:14 Results are shown in Figure 2

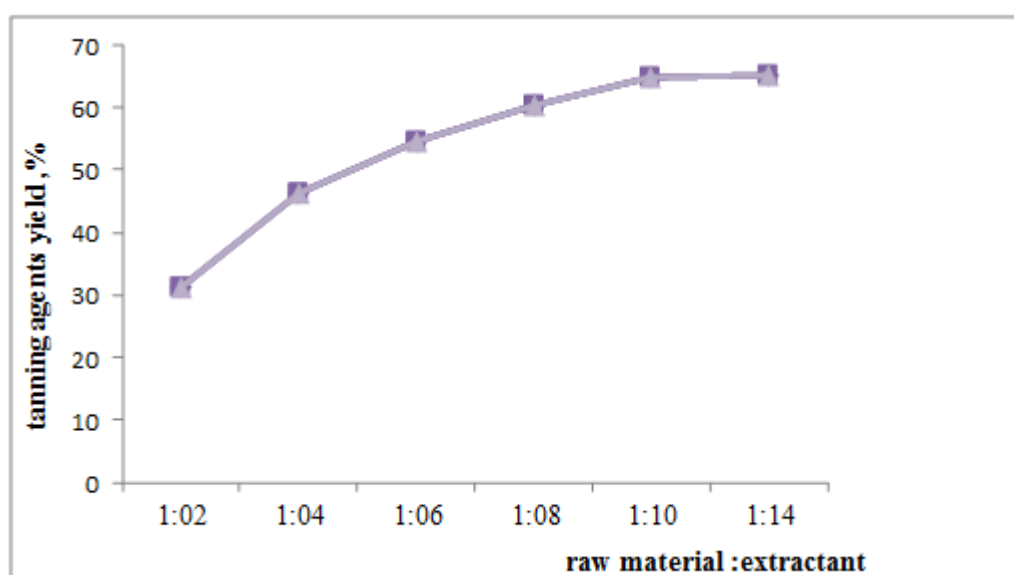


Figure 2. The influence of raw material: extractant correlation on the yield of existing substances.

#### 4. CONCLUSION:

Thus, from the results of the research we can conclude the following:

1. Technological factors of the extraction process of dry extract from *Geranium collina* were studied.
2. The results of the research showed that the extraction method was percolation, 40% ethanol was chosen as an extractant, and hydro-module of raw material and extractant was made in the ratio 1:10, the optimal grinding of raw materials was 3 mm.

#### REFERENCES:

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