ISOTHERMAL MEDICINAL HERBAL MOTHERWORT (*Leonurus cardiaca*) AND MOTHER AND STEPMOTHER (*Tussilago*)

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Abstract: *in the work studied the sorption and desorption of water vapor samples medicinal herbs motherwort (Leonurus cardiaca) and mother-and-stepmother (Tussilago) at 293 K. The results are shown in the figure. On the basis of sorption isotherms of water vapor samples of medicinal herbs by equation Brunauer, Emmett and Taylor have been calculated monolayer capacity, specific surface area, total pore volume and the radius of the capillaries. Maximum moisture which may be due to sorption material vapor from the environment (the maximum adsorption capacity at φ = 100%) is called hygroscopic moisture content W. It can be defined on the graph by the sorption isotherm isotherm crossing point with the line φ = 100%. The higher the moisture absorbent material, the more it can absorb moisture from the air during storage.*
Keywords: *sorption, desorption, drying, medicinal herbs.*

ИЗОТЕРМА ЛЕКАРСТВЕННЫХ ТРАВ ПУСТЫРНИК *(Leonurus cardiaca)* и МАТЬ-И-МАЧЕХА *(Tussilago)*

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Аннотация: *в работе изучены сорбция и десорбция паров воды образцами лекарственных трав пустырник (Leonurus cardiaca) и мать-и-мачеха (Tussilago) при температуре 293 К. Полученные данные приведены в рисунке. На основе изотерм сорбции паров воды образцами лекарственных трав по уравнению Брунауэром, Эмметом и Тейлором были вычислены емкость монослоя, удельная поверхность, суммарный объём пор и радиус капилляров. Максимальная влажность, которую может иметь материал за счет сорбции пара из окружающей среды (максимальная сорбционная емкость при φ=100%), называется гигроскопической влажностью W. Ее можно определить на графике изотермы сорбции по точке пересечения изотермы с линией φ=100%. Чем выше гигроскопическая влажность материала, тем больше влаги он может поглотить из воздуха при хранении.*
Ключевые слова: *сорбция, десорбция, сушка, лекарственных трав.*

Moisture microcapillaries fills narrow pores, the average radius of less than 10^{-4} mm. Liquid fills any microcapillaries not only in direct contact, but also by sorption from moist air. Capillary moisture is moisture free. It moves in the body as a liquid (usually from the central body to the evaporation zone layers) and a couple (through the evaporation zone by the dry layer outside) [1].

According to the number of adsorbed water all substances during the drying process herbs are divided into hydrophilic, hydrophobic and moderately sorbing. Such a division is conditional, since the sorption capacity herbs in the water depends on the temperature, pressure and thermal history of the material.

Vacuum measurement is made on the vacuum gauge VIT-1A (ionization vacuum gauge, thermocouple) with a measuring range from 10^{-1} - 10^{-3} Па.

The working part consists of a cylindrical vessel, held in a vertical position. Cylindrical receptacle consists of two parts which are lapped each other using vacuum grease. To the top, inside, attached quartz spring balance Mack-Ben. On the quartz spring suspended quartz or glass cup with the sample polymer. Stretching spring quartz measured cathetometer KM-8 [2-3].

We studied the sorption and desorption of water vapor at 293 K for two typical medicinal herbs. The results are shown in table 1.

Table 1. The sorption and desorption of water vapor samples of medicinal herbs

Sample	**Motherwort** ***(Leonurus cardiaca)***		**Mother and stepmother** ***(Tussilago)***	
Relative humidity, %	Sorption, %	Desorption, %	Sorption, %	Desorption, %
10	0,00	0,20	0,00	2,30
30	0,05	0,40	0,20	3,90
50	0,20	0,85	0,30	6,40
65	0,70	1,80	1,20	9,80
80	1,60	3,70	3,10	15,20
90	3,50	7,10	11,30	20,85
100	9,40	9,40	22,00	22,00

Possible determine the equilibrium moisture sorption isotherm from curve and desorption as well as set up some moisture is necessary to dry the material to the storage it did not increase its moisture by sorption from the air [4].

Maximum moisture which may be due to sorption material vapor from the environment (the maximum sorption capacity at φ=100%) is called hygroscopic moisture content W. It can be defined on the graph by the sorption isotherm isotherm crossing point with the line φ=100%. The higher the moisture hygroscopic material, the more it can absorb moisture from the air during storage.

Analysis of sorption isotherms and desorption is important to clarify the characteristics of the forms of moisture due to the material. Knowledge of hydrothermal equilibrium is necessary to select the optimum mode of drying and storage of material [5].

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