

ISOLATION OF CYTISINE FROM *Thermopsis dolichocarpa*

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In order to broaden the raw-materials basis for the production of cytisine, we have studied the epigeal part of the plant *Th. dolichocarpa* [1], a perennial plant growing in Central Asia. Thickets are found mainly in the Gissar range along the rivers Gulioy, Shargun', Karatag, and Khanaka, and also on the Darvaza and Vakhsh ranges of Tadzhikistan. The total area of growth is about 2000 ha, from which about 500 tons of the plant (in the dry state) can be collected each year.

We have performed a quantitative determination of the amount of cytisine in the various organs of *Th. dolichocarpa* collected in the gorge of the R. Shargun' in 1972:

Parts of the plant and vegetation period	Time of collection	Total alkaloids as % of the weight of the raw material	Cytisine as % of the weight of the raw material
Epigeal part, budding stage	III/20-30	2.1	0.5
Ripe seeds	VIII/20	3.5	1.62
Roots	IV/15-30	0.26	0.15

Although the seeds contain more cytisine [2, 3] than the epigeal part [4], the isolation of cytisine from the seeds is complicated by the large amounts of fatty and protein substances that they contain. Furthermore, the collection of the seeds on the industrial scale is far more difficult. Consequently, we investigated the epigeal part of *Th. dolichocarpa*. The processes of extraction, sorption, and desorption of cytisine were studied. For its extraction from the plant raw material, the best results were obtained by using a 0.25% solution of sulfuric acid as solvent. The optimum results in the isolation of the cytisine from the extracts were given by the use of KU-2 ion-exchange resin. In choosing the eluent for the desorption of the cytisine from the KU-2 resin, various solvents and mixtures were tested. The best proved to be 90% ethanol containing 3% ammonia.

On the basis of the investigations performed, we have developed an adsorption method for obtaining cytisine from the epigeal part of *Th. dolichocarpa*, and the method is proposed for the production of cytisine. By this method, *Th. dolichocarpa* yields 2.1% of total alkaloids and 0.37% of cytisine on the air-dry raw material.

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