POLAROGRAPHIC DETERMINATION OF CYTISINE IN EXTRACTS

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Cytisine has been determined polarographically in the combined alkaloids of Thermopsis previously [1]; we have established the possibility of determining this alkaloid directly in extracts.

An accurately-weighed sample (10 g for the epigeal part and 5 g for the seeds) of the comminuted air-dry raw material wetted with 10% ammonia (1 ml per 1 g) was shaken with chloroform for 2 hr (400 and 200 ml, respectively). We had found the optimum conditions of extraction previously. The extract was filtered, 100 ml evaporated to dryness, the residue was dissolved in 50 ml of ethanol, 0.5 ml of the solution was transferred to the electrolyzer, 2.0 ml of the supporting electrolyte, 0.1 N $(C_2H_5)_4NOH$ in 80% ethanol, was added, and polarography was carried out as described previously in a LP-55A instrument. A standard solution of cytisine with an initial concentration of 1.0 mg/ml was polarographed under the same conditions. The amount of cytisine was calculated from the formula given previously [1].

We have analyzed various types of plant raw material for their cytisine content (table). In order to check the correctness of the results obtained, in parallel with an analysis of the extract the amount of cytisine in the combined alkaloids isolated from 100 ml of the extract and the amount in the eluate of the chromatographic separation of the cytisine from the accompanying alkaloids were determined. For this purpose, the precipitate after the evaporation of 100 ml of the extract was dissolved in 10 ml of ethanol, 0.5 ml of the ethanolic solution was transferred to a thin layer of KSK silica gel fixed with gypsum, and chromatography was carried out in the chloroform–methanol–25% ammonia (30 : 60 : 2) system [2]. The cytisine was eluted with 50 ml of ethanol, the eluate was evaporated to dryness, and the residue was dissolved in 2 ml of ethanol; 0.5 ml of this solution was taken, 2 ml of supporting electrolyte was added, and polarography was carried out under the conditions of the determination. An eluate obtained by the chromatography of 0.5 ml of cytisine (c 5.0 mg/ml) was used as the standard. The chromatographically homogeneous standard was obtained by the recrystallization of a pharmacopeal preparation from acetone.

Results of Analyses of Plant Raw Material

Material	Content of sytisine, % of the weight of the absolutely dry raw material		
	in the extract	in the combined alkaloids isolated from the extracts	after the chromatographic separation of the extract
Th. alterniflora epigeal part	2.00	2.00	1.98
Th. lanceolata epigeal part	1.38	1.25	1.30
seeds	1.58	1.50	1.61
Th. dolichacarpa epigael part	0.96	0.90	0.90
seeds	2.16	1.92	2.06

REFERENCES

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