

QUANTITATIVE DETERMINATION OF SANGUINARINE
AND HELERITRINE IN *Bocconia cordata*

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A method for the separate quantitative determination of sanguinarine and heleritrine in the epigeal part of *Bocconia cordata* (*Macleaya cordata*; pink plumepoppy) has been developed.

The comminuted raw material (5 g) was covered with 100 ml of chloroform, 5 ml of 10% ammonia solution was added, and the mixture was allowed to stand until the following day. The filtered extract (50 ml) was evaporated to dryness and the dry residue was dissolved in 5 ml of chloroform; 0.1 ml of the resulting solution was separated by the TLC method on KSK silica gel (fixed layer) using as the mobile phase diethyl ether-benzyl ethyl ether-methanol (25:25:3). The plates were dried in the air for 30 min. To the sections of the adsorbent containing about 100 μ g of the alkaloids removed from the plates (sanguinarine: orange spot, R_f about 0.5; heleritrine: yellow spot, R_f about 0.3) were added in each case 10 ml of water, 2 ml of concentrated acetic acid, and 0.2 ml of a 1% aqueous solution of Tropaeolin 000-2. The tropaeolines of the alkaloids were extracted with chloroform (3 \times 15 ml). The chloroform solutions were filtered through paper filters into 50-ml measuring flasks and were made up to the marks with chloroform. The optical densities of the solutions were measured one hour after the addition of the Tropaeolin on a FÉK [photoelectric colorimeter] at 410-420 nm in a cell with a layer thickness of 1 cm against a blank experiment with sections of the adsorbent not containing alkaloids. In the region of working concentrations, the adsorption of the solutions obeys the Beer law.

TABLE 1. Metrologic Data

Alkaloid	n	\bar{x}	$s_{\bar{x}}$	E_{25}	t_{rel}
Sanguinarine	10	0,224	0,0010	0,0023	1,03
Heleritrine	10	0,304	0,0018	0,0042	1,38

TABLE 2. Results of a Check on the Accuracy of the Method of Separate Determination of Sanguinarine and Heleritrine in Raw Material with the Aid of Additives

Alkaloid	Added to the crude alkaloid	Calculated	Found	Relative error, %
	mg			
Sanguinarine	3,45	13,85	14,00	+1,08
	3,45	13,85	13,60	-1,80
	3,45	13,85	14,50	+4,69
	2,30	12,70	12,50	-0,57
	2,30	12,70	12,54	-1,26
Heleritrine	2,30	12,70	13,00	+2,36
	4,35	18,55	18,25	-1,62
	4,35	18,55	18,12	-2,32
	4,35	18,55	19,07	+2,80
	6,52	20,72	21,50	+3,76
	6,52	20,72	21,35	+3,01
	6,52	20,72	20,50	-1,06

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To construct calibration curves, 10 mg each of sanguinarine and heleritrine were dissolved in 5 ml of chloroform, and 0.05, 0.10, 0.15, and 0.20 ml of the solutions were deposited on plates, and the process of estimation was carried out as described above.

Results relating to the reproduceability and accuracy of the method are given in Tables 1 and 2, respectively.