

## APPLICATION OF OSCILLOGRAPHIC POLAROGRAPHY IN THE CASE OF ACONITINE POISONING

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Na případu otravy akonitinem je demonstrováno použití oscillografické polarografie při rychlé analýze alkaloidů v biologickém materiálu po extrakci.

In our institute we had to follow a case of suicide of a young woman with her mother, who took a dose of aconitine and veronal. In their room a small bottle was found and a cup of tea containing the drugs.

The post mortem examination of body fluids and organs was carried out by extraction with diethylether in the medium of tartaric acid and a positive reaction for alkaloid was proved by means of Dragendorff reagent.

The presence of veronal and aconitine in the bottle, in the extracts of gastric juice and of various organs was detected by paper chromatography [1]. The UV spectrum of an aconitine standard (aconitinum sulphuricum pharmaceutical grade) showed a maximum at  $235 \mu$  which was evident also in the gastric juice.

Since many alkaloids were studied by means of oscillographic polarography [2], we tried this method for the detection of aconitine.

Aconitine in alkaline solution of 1—2 M-LiOH, NaOH, KOH in concentration of the order of  $10^{-5}$  M gives a distinct incision in the cathodic branch of the oscillographic curve with  $Q$  0,83 (Fig. 1a). With increasing concentration of aconitine the incision becomes

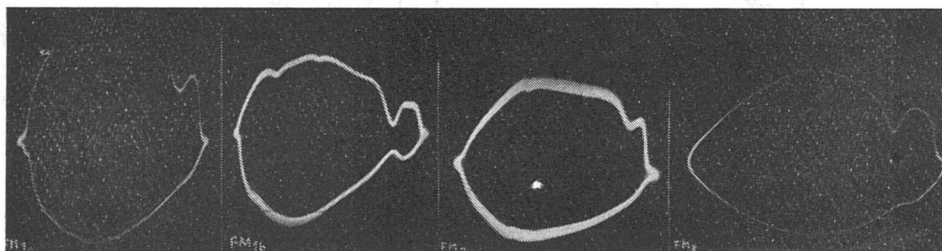
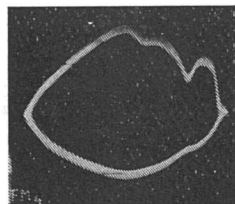


Fig. 1.  $dE/dt = f_1(E)$  curves of aconitine in 1 M-LiOH. Conc. of aconitine: a)  $1 \cdot 10^{-4}$  M; b)  $1 \cdot 10^{-3}$  M. — Fig. 2.  $dE/dt = f_1(E)$  curve of aconitine after heating. — Fig. 3.  $dE/dt = f_1(E)$  curve of  $10^{-3}$  M aconitine in glycine-phosphate buffer pH 10,6. — Fig. 4.  $dE/dt = f_1(E)$  curve of the ethanolic solution of gastric extract in glycine-phosphate buffer pH 10,6.



deeper, there appears a counterpart on the anodic side and at concentration about 10 times higher two other cathodic incisions appear with  $Q$  0,20 and 0,41 (Fig. 1b).

The slight changes of the curve, after the solution has been boiled (Fig. 2), can be explained by partial hydrolysis of the unstable compound [3].

In glycine-phosphate buffer solutions a similar cathodic incision was observed (Fig. 3).

When 0,1 ml of ethanolic solution of the gastric extract was added to 5 ml of glycine-phosphate buffer (pH 10,6), there appeared the characteristic incision with  $Q$  0,84, corresponding to aconitine (Fig. 4). The second flat incision on the curve was not identified. After further addition of the extract, the two other incisions of aconitine appeared.

To complete the analysis we prepared a mixture of aconitine with veronal in buffer solutions and on the curve we obtained two cathodic incisions with  $Q$  0,16 and 0,88. The same picture was gained with the ethanolic solution of the residue in the cup, so that we may conclude that the first incision belonged to veronal [4] and the second one to aconitine.

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### Summary

The author has shown on the case of aconitine poisoning that oscillographic polarography can be used for rapid estimation of alkaloids in biological material after extraction.

## ПРИМЕНЕНИЕ ОСЦИЛЛОГРАФИЧЕСКОЙ ПОЛЯРОГРАФИИ В СЛУЧАЕ ОТРАВЛЕНИЯ АКОНИТИНОМ

ФРАНТИШЕК МУСИЛ

Институт медицинской химии, Карлов университет, Медицинский факультет  
в Пльзне (Пильзен)

На случае отравления аконитином демонстрировано применение осциллографической полярографии при экспрессном анализе алкалоидов в биологическом материале после экстракции.

### LITERATURE

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