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**POLAROGRAPHIC DETERMINATION OF SOME  
CEPHALOSPORINS BY MEANS OF POTASSIUM  
HYDROGENPEROXOMONOSULFATE**

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**Actuality.** Cephalexin monohydrate is a derivate of amynodesacetoxycephalosporane acid, belongs to  $\beta$ -lactamic antibiotics of the I generation with a wide range of pharmacological activity.

**The aim:** development of a simple, rapid, and cost-effective method for the determination of cephalexin in neat substances and powders by the preliminary oxidation of cephalexin in weakly acidic media to respective S-oxide, followed by its quantification by oscillographic polarography.

**Tasks:**

- 1 Record polarograms of cephalexin S-oxide and chose the analytical peak.
- 2 Develop the procedure for cephalexin assay by means of  $\text{KHSO}_5$ .

**Material and methods.** We used a cephalexin substance meeting the requirements of GPhU with the concentration of the titular material 100.9%. The oxidant was a triple potassium salt of Caro's acid. Its active ingredient was  $\text{KHSO}_5$ . The choice of the reagent was determined by its rather high oxidative capacity,  $E^0 = 1.84 \text{ V}$ , easy availability, and satisfactory solubility in water.

**Results and discussions.** The calibration plot was obtained. The relation of current  $I$ ,  $\mu\text{A}$ , at  $-0.800 \text{ V}$  to the concentration of cephalexin  $c$ ,  $\text{M}$ , was approximated by the equation  $I = 1.55 \cdot 10^4 c + 0.04$ ,  $r = 0.996$ . The plot is linear in the range  $(1-10) \cdot 10^{-5} \text{ M}$ . This made possible the further determination by a reference method.

Cephalexin S-oxide in the reaction under study is formed through an electrophilic attack of the oxygen atom in the peroxide group of the peroxyacid to sulfur within 1 min.

Three peaks were recorded in the cathodic branch of the voltammograms of solutions: at  $-0.485 \text{ V}$  (average sharp), at  $-0.800 \text{ V}$  (average smooth), and  $-1.120 \text{ V}$  (small smooth, Fig. 1). The peak height at  $-0.800 \text{ V}$  was chosen for analytical purposes.

**Conclusions:**

1 The proposed method can be easily applied for the quantitative determination of cephalexin in neat substance by means of potassium hydrogenperoxomonosulfate.

2 The redox reaction proceeds completely and stoichiometrically, 1 mol of  $\text{KHSO}_5$  is consumed per 1 mol of the substance.

3 While the determination of  $5 \cdot 10^{-5} \text{ M}$  cephalexin in the substance, RSD was 3% at the accuracy errors  $\delta = -0.46 \%$ .