# POLAROGRAPHIC REDUCTION OF ROBENIDINE

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Coccidiosis is a common infectious amoebic illness affecting domestic animals and especially poultry. The disease has several forms. The acute form of coccidiosis leads to high mortality, chronic form causes weight gain reduction, poor feed conversion and insufficient egg production in poultry. Nowadays this disease is the most dangerous parasitic disease of poultry.

Robenidine [1,3-bis(p-chlorobenzylideneamino)guanidine hydrochloride] is special feed additives which are added to prevent animal's coccidiostats. Presently it actively used in agriculture. However, contamination of animal meat with coccidiostats may occurs, thereby causing adverse effects in humans consuming such meat.

Therefore, reliable methods are needed for accurate qualitative and quantitative determination of robenidine. There are very limited number of robenidine determination methods. Chromatography with various detectors are commonly used. Good alternative to known methods of robenidine determination are electroanalytical methods, particularly voltammetry, which combines high selectivity and sensitivity, relatively, inexpensive instruments, quickness of use and possible automation as well.
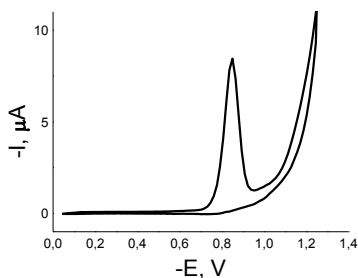


Fig. 1. Cyclic voltammogram in robenidine solution at HCl as background electrolyte, pH 1.3, $C_{robenidine} = 4.0 \times 10^{-5}$ mol/L, $\upsilon = 0.5$ V/s on HMDE

The behavior of robenidine in hanging mercury drop electrode were investigated. The robenidine directly reducted on hanging mercury drop electrode and did not need derivatization to other forms. Cyclic voltammogram of robenidine is shown in Fig. 1.

The different factors, which can affect the reduction of robenidine, was investigated. The study of the pH influence was performed in the pH range from 0.5 to 10. The current of the reduction peak reaches maximum at pH 1.3, then decreases with increasing pH. The initial studies were performed in the presence of HCl, $HClO_4$, $HNO_3$, $H_2SO_4$ and $H_3PO_4$ as well. The best results were obtained in the presence of hydrochloric acid as background electrolyte. Therefore, this acid was chosen to get proper pH, ionic strength and highest current values in following measurements.

Additionally, the analytical parameters were determined. The calibration curve with different values of the concentration of the robenidine solutions were constructed. The linear dependence of reduction current *vs.* concentration were obtained in range from $2.3 \cdot 10^{-7}$ mol/L to $2.0 \cdot 10^{-5}$ mol/L. The detection limit is $1.9 \cdot 10^{-7}$ mol/L, the quantitation limit is $5.7 \cdot 10^{-7}$ mol/L and the corelation coefficient is 0.9999.