

THE DEVELOPMENT AND RESEARCH OF THE ION-SELECTIVE ELECTRODE FOR KANAMYCIN

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Kanamycin sulfate refers to the aminoglycoside antibiotics series and has a broad spectrum of antimicrobial activity. Therefore, there is a need for the development of express methods of analysis of the kanamycin sulfate in dosage forms and in the biological fluids (blood, urine, saliva). The literature describes the ISE on kanamycin with the plasticized membranes based on ion associates kanamycin with tetrafenilborat and acid chrome black. However, the proposed electrodes are characterized by a narrow range of detectable concentrations ($1 \cdot 10^{-3}$ - $4 \cdot 10^{-5}$ M), and low specificity of membrane

$K_{A/B}^{no} \approx 1$ in the presence of organic ions, which complicates analysis of kanamycin in the complex dosage forms. Probably, this is the influence of the properties of membrane of active electorodes. However, in the literature there is a description of the usage of substance with active electorodes with the heteropolianions of Keggin's structure ($XMe_{12}O_{40}^{n-}$, where X(P,Si), Me(Mo(V); W(VI); V(V))). They are insoluble compounds in water, but readily soluble in organic solvents, allowing their use in plasticized ISE membranes. Therefore, we proposed ISE for kanamycin sulfate with the use of associate kanamycin sulfate with phosphomolybdic acid as active electrode substance. The reaction with this reagent is characterized by high sensitivity. Maximum concentration C_{lim} is $(3,6 \pm 0,1) \cdot 10^{-5}$ g/sm³, and limiting dilution V_{lim} is $(1,7 \pm 0,1) \cdot 10^4$ g/sm³.

Studies have shown that ISE electrode's function is linear in the range $(1,0 \pm 0,2) \cdot 10^{-2}$ – $(3,0 \pm 0,2) \cdot 10^{-4}$ M with the slope 26 ± 1 mV, that corresponds to the characteristics of ISE for two charge ion. The response time of electrodes at the minimum concentration of kanamycin sulfate is 20-30 sec. Drift potential of our electrodes per week does not exceed 3-4 mV, and their working life is not less than 4-5 months.

Thus, the proposed ISE for kanamycin sulfate can be used to analyze kanamycin sulfate by the method of ionometry for liquid and solid dosage forms.