THE REACTIVITY OF SUBSTITUTED 9-AMINOACRIDINES

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Introduction. Derivatives of 9-aminoacridine have a wide range of the pharmacological activity, which depends on their reactivity.

Aim. Therefore, to create drugs with the expected high therapeutic effect the reactivity of this series has been investigated for the first time in reversible conditions by studying the process of ionization of acids conjugated with substituted 9-aminoacridines.

Materials and methods. The study of acid-base equilibria was conducted on an EV-74 ionomer using a glass electrode (ESP-43-074) and a silver-silver chloride electrode (EVL-1M) at the temperature of 25^0C. The titrant was 0.01 M aqueous solution of HCl. The concentration of the solutions to be titrated was 0.001 M. Titration of each substance was performed in triplicates. Assessment of the accuracy of the results obtained was carried out by methods of mathematical microstatistics (the confidence interval was 0.95). To prepare the binary solvent a bidistillate, which was free of CO_2, and ethanol were used.

Conclusions.

1. The reactivity of substituted 9-aminoacridines has been studied in reversible conditions.
2. The ionization constants of the corresponding conjugate acids ($pK_{BH}+$) have been determined for 19 compounds by the method of potentiometric titration in the binary ethanol-water solvent at 298 K.
3. The influence of the electronic nature and position of substituents in the molecule of 9-aminoacridine on the basicity of these compounds has been analyzed. The electron donating substituents have been shown to increase their basicity, and the acceptor ones weaken it.
4. Within the principle of linearity of free energies the unified correlation equation for all members of homologous series (except 4-OCH_3) describing the relationship of $pK_{BH}+$ with the Hammett σ-constants with convincing statistical characteristics has been determined.
5. This equation allows to predict the acid-base properties of various substituted 9-aminoacridines; it is of great importance for the molecular design of active pharmacophores in this homological series.