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Electro-kinetic properties of hemoglobin in aqueous solution of 1-, 2- and 3-charged ions

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Abstract

The influence of singly-, doubly- and triply-charged anions and cations (K^+, Na^+, Ca^{2+}, Mg^{2+}, Fe^{2+}, Fe^{3+}, CO_3^{2-}, HPO_4^{2-}/ $H_2PO_4^-$, Cl^-, SO_4^{2-}, $C_3H_5O(COO)_3^{3-}$) on the electro-kinetic properties of aqueous dispersions of hemoglobin have been studied by the method of microelectrophoresis. It has been found that the values of the electro-kinetic potential of hemoglobin depend on the charge, size of ions and ionic strength of the solution in accordance with the classical theory of electric double layer. It has been shown that the carbonate ions and the cations of iron(II, III) is specifically adsorbed by hemoglobin, while other ions – nonspecifically, because the values of isoelectric point of hemoglobin are not shifted as compared to the potential determining ion H^+ and OH^-.