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A method of calculations of the parameters in the Vogel-Tammann-Fulcher's equation: an application to the porcine serum albumin aqueous solutions.

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Viscosity-temperature dependence of the proteins solutions can be quantitatively described by the three parameters Vogel-Tammann-Fulcher's equation. This paper presents a way of calculations of these parameters, based on the nonlinear least square method. The obtained formulae allow calculation of the parameters, if the experimental values of viscosity and temperature are given. It has been checked for porcine serum albumin aqueous solutions. The solutions viscosity, over a wide range of concentrations and at temperatures ranging from 5°C to (42-45)°C, has been measured by using an Ubbelohde-type capillary microviscometer. The Vogel-Tammann-Fulcher's equation with such calculated parameters gives a very good fit to the experimental values of viscosity then. As appeared, these parameters depend on concentration in a quite different way. The polynomial's approximations of these dependences have been proposed and the physical meaning of the parameters has been discussed too.