**Behavior of aqueous lysozyme solution when it’s heated**

**M.I. Prudyvus, K.V. Fedorova, G.P. Petrova**

*Faculty of Physics   
M.V.Lomonosov Moscow State University   
Leninskie Gory, Moscow 119991 Russia*

*email address: fedorova@physics.msu.ru*

Proteins tend to form inactive clusters at high temperatures. However, the protein clusters are one of the main reasons for the mass production of proteins with altered structure. Such proteins may serve as a cause of pathological conditions or lead to death [1].Lysozyme has many potential therapeutic applications to a wide range of human diseases. Lysozyme is part of the innate immune system and modify its level in the organism or its activity leading to various diseases (e.g., neonatal bronchopulmonary dysplasia, [2]). It’s important to study the structure of lysozyme, and to find the influencing factors [3].

In this work, properties of macromolecules of lysozyme have been investigated with temperature change in the range from 20 to 40 °C by method of dynamic light scattering.

Experiments were performed in a pure solution, and using the stabilizing additives (NaCl, CaCl) having an ionic strength of 0,01. The concentration of lysozyme in all cases was 1 mg / ml.

Was found, the temperature range in which there is a change of the molecular structure of lysozyme (It this temperature range from 20 to 30 °C, according to theoretical sources). A restructuring of the active site of lysozyme, which apparently affects the size of the molecule. Calcium ions stabilize the active center when heated and do not prevent thermal aggregation of lysozyme.

Sodium ions have little effect on the restructuring of the active site of lysozyme. In this case, the process of cluster formation is stopping with increasing temperature in the studied range. Hysteresis phenomenon manifests itself actively in this experiment.

There are various structural changes in the enzyme, when the temperature of the aqueous solution of lysozyme changing from 20 ° to 40 ° C. They cause a change in the size and activity of the enzyme’s molecule.

It can be concluded that the ions of sodium and calcium partially prevents changes in the structure of lysozyme.

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