



University of Zabol
Graduate School
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**The Thesis Submitted for the Degree of Master of Science
(In the field of Analytical Chemistry)**

**Study of the simultaneous effect of silver
nanoparticles and 3- β -hydroxy butyrate on
human hemoglobin glycation process**

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Abstract

Glycation of proteins that are responsible for most of the complications of diabetes, publicly cellular and extracellular occur between different proteins, so understanding aggravating factors and inhibit the glycation process to prevent defects or interfere with normal function proteins that cause pathophysiological effects of diabetes is very important. In this study, the effect of silver nanoparticles synthesized by chemical reduction method and 3-beta-hydroxybutyrate during previous reports, as an inhibitor of protein glycation process known human serum albumin in the presence of glucose, the changes in protein structure human hemoglobin that for 42 days in a quasi-physiological conditions (pH=4/7 and temperature 37 °C) were incubated, were studied. The second structural changes of human hemoglobin with various methods such as spectrophotometry UV-Vis, spectroscopy CD and fluorescence spectroscopy were used. The results showed that the presence of Ktvnbady 3-beta-hydroxybutyrate is leading to inhibition of hemoglobin glycation process. We also observed that the presence of silver nanoparticles with 3-beta-hydroxybutyrate, increase hemoglobin glycation inhibitors and thereby protect the alpha and is followed by a decrease in hemoglobin secondary structure changes. The overall result of this study is that, under the terms of the progress of diabetes, hemoglobin glycation, in the presence of silver nanoparticles with 3-beta-hydroxybutyrate, is significantly reduced.

Keywords: Glycation, Human hemoglobin, Silver nanoparticles, Chemical reduction, 3-β-Hydroxy butyrate