

Abstract

Advanced glycation end-products (AGEs) resulting from non-enzymatic glycation are one of the major factors implicated in secondary complications of diabetes. Scientists are focusing on discovering new compounds that may be used as potential AGEs inhibitors without affecting the normal structure and function of biomolecules. In this study, we investigated the effect of Silver (I) nanoparticles (AgNps) on DNA glycation process.

Materials and Methods: In this study samples included control DNA, DNA & glucose, DNA + glucose & 3 beta hydroxybutyrate and DNA + glucose + 3 beta hydroxybutyrate & silver nanoparticles. All samples were incubated in sodium phosphate buffer at pH 4.7 and concentration of 200 mM and sodium azide at a concentration of 2.0 percent for 28 days. AgNPs were characterized using UV-visible and fluorescence spectroscopy, Circular dichroism (CD) measurement, Agarose gel electrophoresis and nuclease S1 assay techniques. Strong inhibition of advanced glycation end product formation was observed in the presence of silver nanoparticles. The results of this study suggest that silver nanoparticles are a potent antiglycating agent. In the present study it was showed that glucose could cause massive damage in the DNA structure, and causing the strand break and formation of Amadori DNA and advanced glycation end products. But the use of silver nanoparticles could greatly inhibit the effect of adding glucose. These findings strongly suggest that AgNPs may play a therapeutic role in diabetes-related complications.

Key words: Glycation, Silver Nanoparticles, DNA, Advanced glycation end-products (AGEs), Silver.



University of Zabol

Graduate school

PA Campus

Department of Biology

**The thesis submitted for the Degree of M.SC
(In the field of Genetic)**

subject:

**The effect of silver nanoparticle on DNA glycation in
presence of 3- β -hydroxy butyrate.**

Supervisor:

Dr. M. Bohlooli

Advisor:

Dr. M. Khaje

Dr. A. Khatibi

By:

A.R ShareMollashahi Khamaky

oct 2016