The inhibitory effect of Aloin and camel peptides on human serum albumin glycation

Abstract: Reports from the Center for Disease Control and Prevention indicate that the incidence of diabetes mellitus is growing in the world. Diabetes mellitus, characterized by defective blood sugar regulation, occurs in two forms: type I and type II. The non enzymatic reactions between reducing sugars with amino groups of K residues of proteins is known as Maillard reaction. Advanced glycated end products (AGEs) are also formed in vivo, especially on long lived proteins such as HSA. In vivo AGEs formation contributes among others to the onset of diabetic complications, renal insufficiency and Alzheimers disease. Aloin is one of the main active phenolic components of Aloe vera. Aloin has received much recent attention and has been shown to be effective in treatment and prevention of various diseases such diabetes. Bioactive peptides derived from milk proteins have been shown to play many biologically important functions such as anti-cancer, antioxidant, anti-hypertensive. In this study the glycated human serum albumin (GHSA) was monitored in the presence of Aloin and bioactive peptides by fluorescence spectroscopy with 1-Anilinonapthaleine-8-sulfonate (ANS) method to study the tertiary structure of glycated HSA. The ANS is a compound that is used for probing the available hydrophobic domains in proteins. The ANS fluorescence spectra in the presence of protein samples were recorded over a wavelength range of 300–600 nm. The excitation wavelength was 385 nm. The highest hydrophobicity was observed for modified HSA incubated for 42 days with glucose. From the results of this it can be concluded that aloin and camel milk peptides reduced tertiary structure changes and glycation.

Keywords: Glycation, Bioactive peptides, Aloin, ANS fluorescence

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