

Spectroscopic studies on the interaction of sheep alpha-2-macroglobulin with ferulic acid

Ahmed Abdur Rehman, Tarique Sarwar, Mohammad Tabish and Fahim Halim Khan

Aligarh Muslim University, India

Phenolic acids are important active components in traditional medicines with different chemical structures and characters. Ferulic acid is a major phenolic acid found in numerous plant species. Because of the presence of phenolic group, it acts as a natural antioxidant, free radical scavenger and metal chelator, and could bind to enzymes and other multi subunit proteins, and modify their structure and function. Alpha-2-macroglobulin is a large glycoprotein present in the plasma as well as extra-vascular fluids of vertebrates. It is one of the major antiproteinases capable of inhibiting virtually any proteinase of any origin. Apart from being a major antiproteinase, α_2M has many other diversified and complex functions, such as, binding, transportation and targeting. In the present study, effect of ferulic acid was observed on the structure of sheep α_2M using various spectroscopy techniques, such as UV spectroscopy, fluorescence spectroscopy, circular dichroism (CD) and Fourier transform infrared spectroscopy (FTIR). With the help of UV and fluorescence spectroscopy, it was found that the conformation of antiproteinase has been changed due to the α_2M -ferulic acid combination. CD and FTIR studies also revealed a change in secondary and tertiary structure of α_2M in the presence of ferulic acid. From the results of these techniques, binding mode was discussed.

Biography

Ahmed Abdur Rehman is pursuing Ph.D. at Department of Biochemistry, AMU, under supervision of Dr. Fahim Halim Khan. He has published a review article in a reputed international journal. He is presently availing prestigious UGC-BSR fellowship and has qualified GATE in the year 2010 with 94 percentile. He has presented posters in a number of national and international conferences.

ahmedarehman@gmail.com