

Perla M. Tovar

Dr. Bidisha Sengupta

Influence of Phytochemicals Present in Mint Extracts in Preventing or Reducing Oxidative Stress in Human Serum Albumin (HSA)

Abstract:

Human Serum Albumin (HSA) is the most prevalent protein in the human body. Due to its major binding sites, HSA functions as an efficient transporter of hormones, fatty acids, and pharmaceuticals in the circulatory system. Damaging reactive oxygen species (ROS) that bind to native HSA induce toxicity by changing its conformation and function. Due to the existence of a single tryptophan (strong fluorophore) in the hydrophobic region of HSA, it is possible to study ligand binding and conformational changes in HSA using optical spectroscopy. The present study investigates the structural alterations induced in HSA by ROS and explores the protective effects of some phytochemicals including luteolin-7-O-rutinoside – present in *Mentha piperita* (mint) and *Mentha spicata*. Optical spectroscopic (UV/Vis) absorption, steady state fluorescence, circular dichroism (CD), HPLC, and SDS polyacrylamide gel electrophoresis techniques were employed to carry out this investigation. With the techniques employed, significant conformational damage in HSA under oxidative stress was observed. For future studies, synergistic antioxidative effects of multiple phytochemicals along with the juice extracts will be explored.