S7

Reactivity of Functional Food Substance in terms of Structure Analysis

Kwon Dae Young
Korea Food Research Institute

Abstract

Hypocholesterolemic peptide isolated from glycinin (11S protein) hydrolyzate by trypsin was purified and identified as LPYP and IAVPGEVA. To investigate the effects of phyiscal properties of side chains of the peptide on the hypocholesterolemic activity, some of mutant peptides were designed and synthesized chemically. The structures of each peptide were simulated and constructed and their conformations were observed by using spectropolarimeter. The hypocholesterolemic activities were monitored by assaying the inhibition of 3-hydroxy-3-methylglutaryl CoA reductase (HMG-CoA reductase) *in vitro* and by the determination of cholesterol content in mice serum. For LPYP derivatives, Hypocholesterolemic activity was lost when hydrophobic leucine residue at N-terminus of LPYPR was substituted with polar residues such as serine, and the arginine at C-terminus was not so critical for maintaining hypocholesterolemic activity. For idealogical design of hypochlestrolemic peptides, the structure of HMG-CoA reductase are shown and inhibition mechanism of some peptides or inhibitors will be presented. For IAVPGEVA derivative inhibition of HMG-CoA reductase has been studied. For detail study of structure related hypocholesterolemic activity, kinetic study of inhibition of purified peptides on HMG-CoA reductase and structural view of ligand binding should be investigated.