

Bioactive food components and metabolic syndrome

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Abstract

The rapid increase in prevalence of metabolic syndrome, which is associated with a state of elevated systemic oxidative stress, is projected to cause future increases in the prevalence of diabetes and cardiovascular diseases. Oxidation of polyunsaturated fatty acids and sugars produces reactive carbonyl species, which, due to their electrophilic nature, react with nucleophilic sites of certain amino acids leading to formation of protein adducts such as advanced glycation/lipoxidation end products (AGEs/ALEs) resulted in cellular dysfunction. Therefore, an effective reactive carbonyl species and AGEs/ALEs sequestering agent can prevent such cellular dysfunction. We have demonstrated that the dietary histidine-dipeptides are effective sequester of cytotoxic carbonyls and prevent various metabolic risk factors in animal model. In addition, bioactive components in plant foods such as carotenoids, tocopherols and oryzanols have been continuously studied for their biological functions against oxidative damage and progression of metabolic syndrome in our laboratory. Identification and characterization of bioactive components in plant foods using state-of-the-art techniques will be introduced. Further, dietary defense strategies against progression of metabolic syndrome utilizing these bioactive food components and their action mechanisms will be discussed.

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Biography

Kyung-Jin Yeum, Ph.D. is a Scientist at the Jean Mayer USDA-Human Nutrition Research Center on Aging and Associate Professor at the Friedman School of Nutrition Science and Policy at Tufts University, a collaborative Professor at Faculdade de Medicina de Botucatu/UNESP in Brazil. Dr. Yeum has been conducting various *in vitro*, animal and human studies to determine action mechanisms of bioactive food components against oxidative stress in humans. Her research efforts have produced more than 50 peer-reviewed articles in this area. Dr. Yeum is a member of various professional societies such as the American Society for Nutrition and International Carotenoid Society.