

## Prevention of lifestyle-related diseases by food ingredients and nutrients

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Lifestyle-related diseases such as atherosclerosis, cardiovascular diseases, type II diabetes and cancer are increasing globally, mainly owing to lifestyle changes associated with high-energy diets rich in lipid and reduced physical activity and increased population of aged people. In order to elucidate molecular mechanisms for promotion of such diseases by excess intakes of some food components such as lipids and/or lack of nutrients and also to develop new strategy for prevention of the diseases by food ingredients and nutrients, we have been studying the followings: (1) cancer chemoprevention by food ingredients present in Shizuoka-local specialties, (2) molecular mechanisms for alcohol-induced carcinogenesis and its prevention by food components, (3) molecular mechanisms for estrogen-associated breast and prostate cancers and search for biomarkers, (4) search for new biomarkers of metabolic syndrome and (5) molecular mechanisms for development of lifestyle-related diseases by abnormal productions of nitric oxide (NO).

We have been investigating reactions of reactive oxygen and nitrogen species and several aldehydes with body components such as nucleic acids, proteins and lipids. New reaction products are being identified using chemical and analytical methods. Their biological effects are also examined by biochemical and molecular biology techniques. Ultra sensitive methods to detect newly identified products in biological specimens will be developed. Once the compounds are validated as biomarkers for lifestyle-related diseases, they will be used for etiological studies, early diagnosis, assessments of therapeutic efficacy and prevention.