

FOOD AS A MICRONANOSYTEM AND ITS INTERACTION WITH THE BODY

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When food ingredients undergoes processing, some composition interact with each other to generate new attributes as in Maillard reaction, while some others can rid themselves of the confinement and migrate from the solid phase to the solution phase with the disruption of cellular structures. The former reaction has been extensively investigated, but the latter remains almost unknown. Our recent works indicate that the latter is the physiochemical reaction which endows food with some of its most important biological functions. It is found that some of the liberated molecules assemble into new structures from nano to micro scale with outstanding physiochemical and biological properties. With this insight, even cooking is no more a low-tech or no-tech chore but a process for natural nanoparticle preparation, and food is a micronanosystem most closely related to the wellness and health. The formation of nanoparticle during processing will be illustrated with our work on nanoparticles from *Alisma orientalis*, a medicinal herb. Meanwhile, by visualizing the intracellular superoxide distribution in living rats, the hepatic superoxide was found to be discharged into the intestinal wall, the most important site for food and body interaction, through the connection of the bile duct. With the intestine involved in the storage and disposal of superoxide as the visceral organ's metabolic waste, the interaction of food nanoparticles with the body can be expected to be elucidated to be much more significant than imagined in a more straightforward manner, and that food will be thy medicine in a more convincing manner.

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