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## Gel properties of SPI modified by enzymatic cross-linking during frozen storage

Soybean protein isolate (SPI) was usually used to improve textural and water holding properties for its good gelation capacity. However, when SPI gel was frozen, protein highly denatured and turned stiffer with poor water holding capacity, in which way the sensory quality of frozen food with SPI addition declined. In order to solve the problem, soybean protein was modified by crosslinking with gelatin using transglutaminase (TG). Gelation properties of modified protein (MSPI) was determined after being frozen. Results showed that after 20 days of freezing treatment, water holding capacity of SPI gels declined by 27% whereas that of MSPI only declined by 4.5%. Increase on hardness and decrease on cohesiveness of MSPI gels were respectively 47.1% and 41.4% compared to those of SPI. Water distribution of MSPI did not change significantly but water content of MSPI was twice as much as that of SPI. Observed from confocal laser scanning microscopy, microstructure of MSPI gels was not damaged much whereas that of SPI gels were more honeycomb-like. The amount of soluble protein and total sulfhydryl of MSPI gels did not decline so much as SPI gels and the forces among protein molecules of the two gels differed. It was inferred that by crosslinking with gelatin, the ability of water molecules to transfer to ice crystals declined so that protein syneresis was prevented and microstructure of the gels maintained. This modification method solve the problem that frozen foods deteriorate after being frozen, so that the quality of frozen food was enhanced.

## Biography

Shuntang Guo is a Professor at College of Food Science and Nutritional Engineering, China Agricultural University in Beijing, China. His research is focused on plant protein processing and utilization, especially soybean and cereals. Within the context of food chemistry and hydrocolloids, his research deals with food (soybean and cereals) processing techniques, hydro colloidal properties of emulsions, isolation, nutrition and functional properties of plant protein and peptides, food flavor identification, etc. He is a member of Chinese Association of Agricultural Science Societies and an Editorial Board Member of several academic journals.

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