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Applied Nanotechnology to Food Development and Necessity of Sodium Ions

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Summary

Improving the physicochemical properties of okara for various applications in foods is of great importance. Here, okara were atomized using a Supermasscolloider (SM) system. We treated 2 wt% okara with the SM system at different passages (1 - 5 times). The particle size distribution (PSD) and viscosity of SM-treated okara decreased and increased, respectively, with passages up to 3 times. In addition, we treated okara with the SM system at different concentrations (1 - 3 wt%). The viscosity of SM-treated okara increased with increasing concentrations. The SM-treated okara also dispersed in water homogeneously at more than 2 wt% after 24 h, whereas untreated and 1% SM-treated okara did not. The SPI gels were not formed without sodium chloride (NaCl). The breaking stress and strain increased with NaCl concentrations up to 0.2% and then decreased. The addition of 1% okara treated at different passages by the SM system increased the breaking stress and strain of SPI gels with increasing of passages. The breaking stress and strain of SPI gels were also increased with increasing SM-treated okara concentrations up to 1%. These results indicate the possibilities that the NC technologies can improve the physicochemical properties of okara and are useful to develop protein gel-based foods.