Rheological Studies of Influence of Dietary Fibers on the Enzymatic Reaction for Soy Protein Isolate

Miki Yoshimur [a] and Katsuyoshi Nishinari [b]

a) School of Human Science and Environment, University of Hyogo
1-1-12, Shinzaike-Honcho, Himeji-shi, Hyogo, 670-0092 Japan

b) Department of Food and Human Health Sciences, Graduate School of Human Life Science, Osaka City University
3-3-138, Sugimoto, Sumiyoshi-ku, Osaka 558-8585, Japan

Summary

The influence of dietary fibers on the enzymatic reaction for soy protein isolate (SPI) was studied by rheological measurements. As has been reported previously, 1% solutions of gellan gum, guar gum, locust bean gum, xanthan gum and konjac glucomannan showed shear thinning flow. Both storage G' and the loss G" moduli of SPI dispersions with and without a dietary fiber decreased with time and G' attained the plateau value in the presence of an enzyme (pancreatin). The decrease in G' was well approximated by a two step first order reaction equation, The plateau values were almost independent of pancreatin concentration in the range studied (from 22units/g to 217units,/g), while rate constants of degradation increased with increasing pancreatin concentration. The rate constant of degradation decreased and plateau value increased with increasing xanthan gum concentration. It was suggested that dietary fibers retarded the enzymatic degradation of SPI from the experimental observation that the rate constants of degradation became smaller and the plateau value became larger by the addition of dietary fibers.