β-Casein aids in the Formation of a Sodium Caprate–induced
β-Lactoglobulin B Gel

Naoko Yuno-Ohta,a* and Milena Corredigb

aJunior College at Mishima, Nihon University, 2-31-145 Bunkyo-Cho, Mishima City, Shizuoka, 411-8555 Japan

bDepartment of Food Science, University of Guelph, Guelph, Ontario, N1G 2W1 Canada

The effects of sodium caprate on the gelation of β-lactoglobulin B and a β-lactoglobulin B/β-casein mixture at ambient temperature were investigated using ultrasonic spectroscopy and rheology. A 12% β-lactoglobulin B solution gelled in the presence of 3.6% sodium caprate. Conversely, sodium caprate did not induce the formation of a gel when β-casein was in isolation, regardless of the protein concentration. Although a 6% β-lactoglobulin B/1.8% sodium caprate solution did not form a gel, a gel was formed when 6% β-casein was added to a mixture containing 6% β-lactoglobulin and 3.6% sodium caprate. This gel showed comparable rheological properties to that of a gel containing 12% β-lactoglobulin B. The results clearly indicated that β-casein aids in the gelation of a β-lactoglobulin B/sodium caprate mixture, when the concentration of β-lactoglobulin B is insufficient to allow for gelation. It appears that β-casein self-aggregation is also inhibited. Therefore, it could be concluded that β-casein can be used as a texture modifier for β-lactoglobulin gelation induced by sodium caprate.


Time dependence of ultrasonic attenuation of β-Lactoglobulin B and β-Casein Mixed Gel

![Graph showing time dependence of ultrasonic attenuation with and without fatty acid salt.]