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Effects of Microbial Transglutaminase for Gelation of Soy Protein Isolate during Cold Storage

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On gelation of soy protein isolate during cold storage, strength, deformation, elasticity E_0 and Newtonian viscosity η_N of the gels greatly increased with addition of one unit/g protein of microbial transglutaminase when kept for 3 days at 5°C, while retardation time λ decreased. With addition of 3 units/g protein, the gels were too hard, but became brittle after being kept for 3 days at 5°C. The viscoelasticity of gel treated during cold storage was superior to that of gel heated after having been kept in cold storage. It was assumed that the texture of the gel treated for one day at 5°C was nearly equivalent to that of the gel treated at 40°C for 60 min, on enzyme reactivity of transglutaminase. ϵ -(γ -glutamyl)lysine bonds in the gels were not formed in the case of the gel without transglutaminase, but increased linearly in the gel with transglutaminase. Contents of the sulfhydryl group of the gel were found to decrease during cold storage, and the degree of decrease was smaller in the gel with transglutaminase than in the gel without transglutaminase. This indicated less contribution of disulfide bonds in the gel treated with transglutaminase during cold storage.

Keywords: [soy protein](#), [gel formation](#), [cold storage](#), [microbial transglutaminase](#), [\$\epsilon\$ -\(\$\gamma\$ -glutamyl\)lysine bonds](#), [sulfhydryl groups](#)



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