

Effect of Different Non-Meat Protein Pre-emulsions on Rheological Properties and Protein Structure of Myofibrillar Protein Composite Gels

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Abstract — This study investigated the effect of different non-meat protein (soy protein isolate, egg white protein isolate, and sodium caseinate) pre-emulsions on the rheological properties, microstructure, and protein structure of myofibrillar protein (MP) composite gels. Heat-induced composite gels were prepared with 2% MP sol and 10% olive oil pre-emulsified by 1% different non-meat proteins in 0.6 M NaCl, at pH 6.2. Adding emulsions markedly improved ($P<0.05$) the water-holding capacity and the storage modulus (G') of composite gels, and enhanced the hardness of composite gels except for the soy

protein isolate emulsion. Furthermore, some non-meat proteins participated in the formation of composite gels. Raman spectroscopy analysis indicated a decrease ($P<0.05$) in α -helix content accompanied by an increase ($P<0.05$) in β -sheet structure after heating. Micrographs revealed that emulsions made the gels become denser and more compact, allowing binding of the meat protein and fat, which corresponded with the textural property results.

Key Words — gelation, Raman spectroscopy, microstructure