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Effects of Monoglyceride Fatty Acid Species on the Properties of Dough Protein

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We investigated the influence of three types of monoglycerides, glyceryl monostearate (monostearate), glyceryl monooleate (monooleate) and glyceryl monoelaidate (monoelaidate), on protein during dough preparation. The addition of monooleate and monoelaidate decreased the amount of protein in the ethanol soluble fraction (corresponding to gliadin) and increased the water soluble fraction. Monostearate did not produce these changes in the protein fractions. The quantities of monooleate and monoelaidate in the ethanol soluble fractions were larger than that of the monostearate. The surface hydrophobicity of the water soluble protein and the 0.01 N acetic acid soluble protein in the dough was determined using the magnesium of 1-anilino-8-naphthalenesulfonic acid. The doughs containing monooleate or monoelaidate showed a decrease in the hydrophobicity of the proteins. After the defatting operation with butanol to remove the monoglycerides, the surface hydrophobicity of these defatted proteins nearly increased to the level of protein which contained no added monoglyceride. It was indicated that the unsaturated monoglycerides, monooleate and monoelaidate were adsorbed into the protein during the dough mixing and lowered the surface hydrophobicity. It was considered that the presence of a double-bond component in the fatty acid may cause bonding to the dough protein.

Keywords: [hydrophobic interaction](#), [protein surface hydrophobicity](#), [gliadin](#), [monoglyceride](#)

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