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Change of Proteins in Instant Chinese Noodle by the Fermentation of *Lactobacillus plantarum* NRIC 0380 Affects the Noodle Quality

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The lactic acid fermentation of instant Chinese noodle sheet by *Lactobacillus plantarum* NRIC 0380 changed the noodle quality as evaluated by texture and sensory tests. This interesting change was induced by only a short 2-h fermentation time, however the noodle quality subsequently degraded with prolongation of the fermentation of up to 24 h. SDS-PAGE analysis of proteins in the noodle sheet indicated no change in proteins extracted from the 2-h fermented noodle sheet compared to non-fermented noodle sheet. In contrast, native-PAGE analysis showed a shift in molecular weight of gluten proteins, with those extracted from the 2-h fermented noodle sheet having a higher molecular weight than those from non-fermented noodle sheet. These results strongly suggested a conformational change of gluten proteins in the noodle sheet caused by the short 2-h fermentation. The 2-h lactic acid fermentation decreased the pH from 8.5 to 7.5, but gluten proteins extracted from noodle sheet made with the addition of lactic acid to adjust the pH to 7.3 did not show this increase in molecular weight. Thus, the change from native state of gluten proteins does not seem to be induced by the presence of the lactic acid itself but by other factor(s) associated with lactic acid fermentation. On the other hand, the reduction of noodle quality by prolonged fermentation for up to 24 h seems to induce degradation of albumin and globulin proteins as revealed by SDS-PAGE analysis and also the change in the native state

of gluten proteins as detected by native-PAGE analysis.

Keywords: fermentation, gluten, instant Chinese noodle, *Lactobacillus plantarum*, *S-S linkage*

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