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Optimization of Alakline Fermentation for Production of Nattokinase

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To optimize the production of nattokinase in alkaline fermentation, *Bacillus subtilis* culture fermented in 5% soymilk was inoculated in cooked small soybean. Nattokinase activity was dependent upon fermentation time and temperature in the solid-culture fermentation, *Bacillus* strains isolated from the traditional fermented soybean paste (Chunggukjang) showed different nattokinase activity. The nattokinase activity indicated the maximum value (53 unit/g) after fermentation for 24hr, after then gradually decreased (39 unit/g). However, the peptide content showed the maximum value (249 mg/100g) after fermentation for 66hr. In addition, the apparent viscosity of water extract of Chunggukjang indicated the highest value (3036 cP, 1.5rpm) after 42hr and then gradually decreased. The reducing sugar content of culture was gradually decreased during fermentation, The freeze dried water extract of chunggukjang retained original nattokinase activity, with forming clear zone on fibrin plate.

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Lactic Acid Fermentation of Prickly Pear Extract

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Lactic acid fermentation of Prickly pear extract (PPE) was performed by *Lactobacillus brevis*, *Lactobacillus bulgaricus*, *Lactobacillus ramosus* LS. Tartratable acidity, pH, viable cell counts and color stability were evaluated during lactic acid fermentation. *L. ramosus* LS showed higher acid production and pigment stability, retaining original red color during fermentation at 30°C for 6 days. After fortifying yeast extract and calcium carbonate the PPE fermented for 4 days by *L. brevis*, *L. bulgaricus* or *L. ramosus* LS indicated 0.62%, 0.75% and 0.92% acidity, respectively. In addition, co-culture with *L. ramosus* LS and yeast isolated from Minari extract enhanced acid production (0.9% acidity) and pigment stability during fermentation for 6 days. Lactic acid fermented PPE indicated 2×10^8 cfu/ml and below pH 3.5. Flavor of fermented PPE was enhanced by increasing the inoculum size of starter cultured in PPE and skim milk mixture.