

Influence of starter culture on the physicochemical properties of rice bran sourdough and physical quality of sourdough bread

ABSTRACT

The effect of mixed strain culture of lactic acid bacteria (LAB) and Yeast, and yeast or *L. brevis*, *L. plantarum*, or *L. sanfranciscencis* on the physicochemical properties (pH, TTA, organic acid, ethanol, and sugar content) of rice bran sourdough was investigated. Starter culture with optimum physicochemical properties was used to ferment rice and wheat bran for sourdough production. Rice and wheat bran sourdough and non-fermented rice and wheat bran were mixed with wheat flour at 10% substitution level for bread production. Results showed that rice bran fermented with *L. plantarum* had the best physicochemical properties compared to rice bran sourdough produced by other LAB or mixed culture. The specific volume of bread sample made with rice bran sourdough (4.65 cm³ /g) was higher than that of the bread samples made from wheat bran sourdough (4.32 cm³ /g) and nonfermented bran (3.74 – 4.24 cm³ /g), but not significantly different from the control (100% wheat) bread (4.85 cm³ /g). The crumb colour of the rice bran and rice bran sourdough substituted bread was lighter than that of the other bread samples. Crust colour of all the bread samples was not significantly different ($p > 0.05$). At the end of 6 days storage period, bread samples from control and wheat bran sourdough were firmer than that from rice bran sour dough, however, crumb firmness values were highest in non-fermented bran substituted bread. Sensory analysis result revealed that rice bran sourdough bread was more acceptable than wheat bran sourdough bread, and non-fermented rice and wheat bran substituted bread.

Keyword: Rice bran; Sourdough bread; Physicochemical properties; Crumb firmness; Sensory analysis