

Study on physicochemical characteristics of local colored rice varieties (black, red, brown, and white) fermented with lactic acid bacteria (SBM.4A)

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| Abstract | <p>In this study, the physicochemical properties of local colored rice flour were studied after modification through fermentation with lactic acid bacteria (LAB) SBM.4A. SBM.4A was LAB isolated from the rice washing water and was in the cladogram of the <i>Pediococcus pentosaceus</i> strain SRCM102739 CP028266.1 and <i>Pediococcus pentosaceus</i> strain SRCM102738 CP028264.1. The studied rice varieties were wakacinda (white rice), wakawondu (red rice), warumbia (brown rice), and wakaombe (black rice). Characterizations of both fermented and native rice flour included chemical composition, FTIR profile, crystallinity, morphology, and pasting properties. Fermentation did not introduce new chemical functional groups to the flour and only slightly increased crystallinity from approximately 22.5% to 25.05%. In contrast, fermentation greatly affected the chemical composition and pasting properties of rice flour. Protein content of the fermented flour increased up to 214% relative to the native rice flour. Effect of fermentation on pasting properties varied between rice varieties. Increase in peak and final viscosities was observed in red, brown, and black rice. The opposite effect was found in white rice. However, fermentation improved the stability of flour to retrogradation for all rice varieties. These showed that the fermentation improved the properties of the local-colored rice flour and may widen their application as food ingredients.</p> |
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