



Microbiological, sensory, and chemical properties of high-quality tempeh made with instant *Mosaccha* tempeh inoculum powder

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Abstract

The combination of *Saccharomyces cerevisiae* and *Rhizopus oligosporus* liquid inoculum has been successfully used to ferment soybeans into tempeh that contains β -glucan. However, using the liquid inoculum of these two microbes as a starter is impractical; so, developing an instant tempeh dry inoculum in powdered form, called the *Mosaccha* inoculum powder, for ease of use is necessary. This study aimed to determine the best concentration of instant *Mosaccha* inoculum powder to produce high-quality *Mosaccha* tempeh. The study used a Complete Randomized Block Design with seven different levels of instant *Mosaccha* inoculum powder percentage, ranging from 0.3% to 1.8% (w/w). A commercial tempeh inoculum, RAPRIMA, amounting to 0.2%, was used as control. Then, the microbiological (total mold and total yeast) and sensory (color, aroma, texture, and taste) properties were evaluated. The data obtained was analyzed statistically using analysis of variance (ANOVA) and Honestly Significant Difference (HSD) tests at the 5% level. The results showed that the percentage of instant *Mosaccha* inoculum powder significantly affected the microbiological and sensory properties of *Mosaccha* tempeh. A concentration of *Mosaccha* inoculum powder between 0.6% to 1.8% could produce good quality *Mosaccha* tempeh, but the best *Mosaccha* tempeh was produced with 1.5% instant *Mosaccha* inoculum powder, which met the Indonesian National Standards (SNI) 3144:2015, had a very favorable taste, and contained 0.49% β -glucan. Therefore, *Mosaccha* inoculum in powdered form can be developed and used as a starter in making high-quality tempeh that contains β -glucan.

Keywords

Mosaccha tempeh, *tempeh inoculum*, *Rhizopus oligosporus*, *Saccharomyces cerevisiae*

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INTRODUCTION

Tempeh, a traditional Indonesian fermented food, is well-regarded for its appealing taste and texture and its excellent digestibility (Puteri et al., 2018). According to SNI 3144:2015, tempeh is a compact, white solid product made by boiling and fermenting soybeans with *Rhizopus spp.* The mycelium growth of *Rhizopus spp.* during

fermentation binds the soybeans together, resulting in the desired compactness of tempeh (Astawan et al., 2013).

Fermentation brings about both chemical and physical changes in tempeh, driven by the presence of the lipoxidase

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