

**SPINACH (*Spinacia oleracea L.*) AS A CO-SUBSTRATE  
FOR THE PRODUCTION OF TEMPEH**

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This Final Year Project Report entitled “**SPINACH (*Spinacia oleracea L.*) AS A CO-SUBSTRATE FOR THE PRODUCTION OF TEMPEH**” was submitted by Azizul Hakim Bin Ahmad, in partial fulfillment of the requirements for the Degree of Bachelor of Science (Hons.) Biology, in the Faculty of Applied Sciences, and was approved by

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## ABSTRACT

### SPINACH (*Spinacia oleracea* L.) AS A CO-SUBSTRATE FOR THE PRODUCTION OF TEMPEH

Spinach has been used as a co-substrate to soybeans to determine its ability in the production of tempeh by using the expected *Rhizopus Oligosporous* strain. *R. Oligosporous* was identified microscopically and common characteristics of the strain was well observed. The strain was cultured on SDA culture for 48 hours at 35°C. After the cultured is well grown, mycelia fully covered the petri dishes, spore suspension was made. The spore suspension act as a tempeh starter to produce the tempeh. After mixing the substrates with the spore suspension, soybeans took 48 hours at 35°C to fully ferment and produce tempeh while mix substrate took 24 hours at 37°C to fully ferment. All the tempeh produce has been observed by examining the color, surface coverage of mold mycelia, compactness, sliceability, and texture. Nutrition analysis showed the soybeans tempeh has higher protein, ash, and fats content while mix tempeh has higher moisture and carbohydrates. Thus, spinach can be used as a co- substrate in the production of high nutrition tempeh due to its higher carbohydrates content.