

**TITLE:** pH INFLUENCES ON TEMPEH ELABORATION AND PHYSICOCHEMICAL PARAMETERS

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**ABSTRACT:**

Tempeh is an Indonesian typical food obtained by soybeans fermentation with *Rhizopus oligosporus*. The elaboration process is simple, but some modifications could improve final product. In this work, the effect of pH by the addition of vinegar during tempeh fermentation was evaluated. The mold count and physicochemical parameters of final product were also determined. Organic soybeans cotyledons were hydrated (1:10; w/w) for 18 h at room temperature, peeled and cooked for 45 min. After were drained, dried, cooled up to 25 °C and inoculated with *Rhizopus oligosporus* (100:0.7, w/w), disposed in perforated polypropylene package and incubated at 30°C for 40 h. This tempeh was named control (TC) and the differentiation of samples was the addition of 12.5 g of white alcohol vinegar on cooking step (TV). The pH was determined before inoculation, after 5, 10, 20, 27 and 40 h of fermentation. On final product, the mold count and the content of moisture, protein, lipids and ash were analyzed. The pH before inoculation and after 5 h of fermentation was 5.7 (TC) and 4.6 (TV), after 10 h was 5.7 (TC) and 5.1 (TV), after 20 h was 5.7 (TC) and 5.5 (TV), after 27 h was 7.3 (TC) and 6.0 (TV) and after 40 h was 7.0 (TC) and 6.6 (TV). The mold count was  $7.5 \times 10^8$  (TC) and  $7.8 \times 10^9$  UFC g<sup>-1</sup> (TV). Additionally, TV had the most expressive presence of white mold on surface, reinforcing the importance of acidity on fermentation efficiency by the use of vinegar. The moisture, protein, lipids and ash contents were similar between samples. The moisture was 65.5 (TC) and 64.8 g 100 g<sup>-1</sup> (TV), protein was 4.2 (TC) and 3.9 g 100 g<sup>-1</sup> (TV), lipid was 18.7 (TC) and 19.4 g 100 g<sup>-1</sup> (TV), and ash was 1.1 (TC) and 1.2 g 100 g<sup>-1</sup> (TV). The vinegar improved *Rhizopus oligosporus* development on tempeh fermentation, and did not affect physicochemical properties of final product, except the pH.

**Keywords:** fermentation, mold, pH, *Rhizopus oligosporus*, soybean

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