

## Evaluation of a Malaysian soy sauce koji strain *Aspergillus oryzae* NSK for $\gamma$ -aminobutyric acid (GABA) production using different native sugars

### ABSTRACT

In this study, a selected  $\gamma$ -aminobutyric acid (GABA)-rich Malaysian strain *Aspergillus oryzae* NSK was collected from soy sauce koji. The strain was used to explore the effect of using renewable native sugar syrup, sugarcane, nipa, and molasses as fermentable substrates for developing a novel functional GABA soy sauce. We evaluated the strain using the chosen native sugars for 7 days using shake flask fermentation at 30 °C. The results showed optimum GABA concentration was achieved using cane molasses as the fermentable substrate (354.08 mg/L), followed by sugarcane syrup (320.7 mg/L) and nipa syrup (232.07 mg/L). Cane molasses was subsequently utilized as a substrate to determine the most suitable concentration for *A. oryzae* NSK to enhance GABA production and was determined as 50% g/L of glucose standard cane molasses. Our findings indicate that cane molasses can be used as a GABA-rich ingredient to develop a new starter culture for *A. oryzae* NSK soy sauce production.

**Keyword:** *Aspergillus oryzae*; GABA; Cane molasses; Koji fermentation; Soy sauce