

## Improvement of Production of $\gamma$ -Aminobutyric Acid by *Lactobacillus plantarum* Isolated from Indigenous Fermented Durian (Tempoyak)

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**Abstract :** Background: Tempoyak is a dish derived from fermented durian fruit. Tempoyak is a food consumed as a side dish when eating rice. Besides being eaten with rice, tempoyak can also be eaten directly. But this is rarely done because many cannot stand the sour taste and aroma of the tempoyak itself. In addition, tempoyak can also be used as a seasoning. The taste of tempoyak is acidic, this occurs because of the fermentation process in durian fruit meat which is the raw material. Tempoyak is already very well known in Indonesia, especially in Padang, Bengkulu, Palembang, Lampung, and Kalimantan. Besides that, this food is also famous in Malaysia. The purpose of this research is to improvement production of  $\gamma$ -aminobutyric acid (GABA) by *Lactobacillus plantarum* isolated from indigenous fermented durian (tempoyak). Selected Lactic Acid Bacteria (LAB) previously isolated from indigenous fermented durian (tempoyak) that have ability to produce  $\gamma$ -aminobutyric acid (GABA). The study was started with identification of selected LAB by 16 S RNA, followed optimization of GABA production by culture condition using different initial pH, temperature, glutamate concentration, incubation time, carbon and nitrogen sources. Results: The result from indentification used polymerase chain reaction of 16S rRNA gene sequences and phylogenetic analysis was *Lactobacillus plantarum* (coded as Y3) with a sequenced length of 1400bp. The improvement of Gaba production was found highest at pH: 6.0; temperature: 30 °C; glutamate concentration: 0.4%; incubation time: 60 h; glucose and yeast extract as carbon and nitrogen sources. Conclusions: GABA can be produced with the optimum condition fermentation were 66.06 mM.

**Keywords :** lactic acid bacteria,  $\gamma$ -amino butyric acid, indigenous fermented durian, PCR

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