

**PENGARUH FERMENTASI TERHADAP PENURUNAN AFLATOKSIN
B₁ PADA KACANG TANAH (*Arachis hypogaea* L.)**

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diajukan untuk memenuhi sebagian syarat untuk memperoleh gelar Sarjana Sains
Program Studi Kimia



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ALAM
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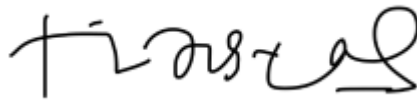
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ABSTRAK

Kacang tanah (*Arachis hypogaea* L.) merupakan tanaman polong-polongan yang kaya akan nutrisi, seperti protein, lemak, karbohidrat, multivitamin, mineral, dan antioksidan. Salah satu produk samping olahan kacang tanah adalah bungkil kacang tanah, yang sering digunakan sebagai pakan ternak. Kacang tanah dan bungkil kacang tanah rentan terserang jamur *Aspergillus flavus* dan *Aspergillus parasiticus*. Jamur ini dapat menghasilkan metabolit sekunder sangat beracun, yaitu aflatoksin B₁ (AFB₁). Oleh karena itu diperlukan upaya untuk mengurangi AFB₁ pada kacang tanah, salah satunya adalah fermentasi. Fermentasi terbukti efektif untuk mendegradasi dan menghilangkan mikotoksin. Namun, keefektifan fermentasi dipengaruhi oleh beberapa faktor, salah satunya adalah mikroorganisme yang digunakan. Tujuan penelitian ini adalah untuk mengetahui pengaruh fermentasi dengan jenis mikroorganisme yang berbeda terhadap pengurangan dan perubahan struktur AFB₁ pada kacang tanah. Metode yang digunakan dalam penelitian ini adalah tinjauan pustaka sistematis. Berdasarkan data sekunder dari tiga artikel rujukan, pada penggunaan mikroorganisme tunggal, bakteri asam laktat (BAL) menghasilkan penurunan aflatoksin B₁ lebih tinggi daripada non-BAL dan ragi. Namun jika dibandingkan dengan fermentasi menggunakan gabungan dua mikroorganisme yang berbeda, gabungan dua BAL dapat menghasilkan penurunan aflatoksin B₁ paling signifikan. Setelah proses fermentasi, baik BAL, non-BAL, dan ragi umumnya dapat memodifikasi struktur aflatoksin B₁ pada cincin lakton, ikatan rangkap C8-C9, dan gugus karbonil. Namun, pada penggunaan *Lactobacillus plantarum* terjadi dekarboksilasi struktur aflatoksin B₁ menjadi struktur yang lebih sederhana.

Kata kunci: kacang tanah, fermentasi, aflatoksin B₁, BAL, non-BAL

ABSTRACT

Peanuts (*Arachis hypogaea* L.) are a plant of legumes rich in nutrients, such as protein, fat, carbohydrates, multivitamins, minerals, and antioxidants. One of the processed byproducts of peanuts is peanut meal, which is often used as animal feed. Peanuts and peanut meal are susceptible to the fungi *Aspergillus flavus* and *Aspergillus parasiticus*. This fungi can produce a highly toxic secondary metabolite, aflatoxin B₁ (AFB₁). Therefore strategies are needed to degrade AFB₁ in peanuts, such as fermentation. Fermentation has been shown to be effective for degrading and removing mycotoxins. However, the effectiveness of fermentation is influenced by several factors, one of them is the microorganisms used. The purpose of the study was to determine the effect of fermentation with different types of microorganisms on the reduction and change in the structure of AFB₁ in peanuts. The method used in this study is a systematic literature review. Based on secondary data from three reference articles, on the use of single microorganisms, lactic acid bacteria (LAB) resulted in a higher reduction in AFB₁ than non-LAB and yeast. But when compared to fermentation using a combination of two different microorganisms, the combined two LAB can produce the most significant reduction in AFB₁. After the fermentation process, both LAB, non-LAB, and yeast can generally modify the structure of AFB₁ in the lactone ring, C8-C9 double bond, and carbonyl group. However, in the use of *Lactobacillus plantarum* there is a decarboxylation of structure AFB₁ into a simpler structure.

Keyword: peanuts, fermentation, aflatoxin B₁, LAB, non-LAB

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