

**SKRIPSI**

**UJI DAYA HAMBAT ANTIBAKTERI EKSTRAK RIMPANG  
LENGKUAS MERAH (*Alpinia galanga* (L.) Willd) TERHADAP  
BAKTERI *Lactobacillus acidophilus* ATCC 4356**



**Oleh :**

**SHASYA NURUL AISYA GUSMAN  
No. BP.2111413014**

**FAKULTAS KEDOKTERAN GIGI  
UNIVERSITAS ANDALAS  
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**Pembimbing 1 : drg. Haria Fitri, M.Biomed**  
**Pembimbing 2 : Dr. drg. Oryce Zahara, Sp. Ort**

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**UJI DAYA HAMBAT ANTIBAKTERI EKSTRAK RIMPANG LENGKUAS  
MERAH (*Alpinia galanga* (L.) Willd) TERHADAP BAKTERI  
*Lactobacillus acidophilus* ATCC 4356**

Shasya Nurul Aisya

**ABSTRAK**

**Latar belakang:** Karies gigi merupakan penyakit infeksi multifaktorial yang ditandai oleh kerusakan jaringan keras gigi akibat aktivitas bakteri asidogenik. *Lactobacillus acidophilus* berperan penting dalam progresi karies karena kemampuannya memproduksi asam dan bertahan pada lingkungan asam. Pemanfaatan bahan alami sebagai agen antibakteri menjadi salah satu pendekatan preventif yang potensial, salah satunya rimpang lengkuas merah (*Alpinia galanga* (L.) Willd) yang diketahui mengandung senyawa bioaktif antibakteri. **Tujuan:** Penelitian ini bertujuan untuk mengetahui daya hambat antibakteri ekstrak rimpang lengkuas merah terhadap bakteri *Lactobacillus acidophilus* ATCC 4356. **Metode:** Penelitian ini merupakan penelitian *true experimental laboratoris* dengan desain *post-test only with control group*. Ekstrak rimpang lengkuas merah dibuat dengan metode maserasi menggunakan pelarut etanol 96% dan diencerkan menggunakan DMSO 10% sehingga diperoleh konsentrasi 20%, 40%, 60%, 80%, dan 100%. Uji antibakteri dilakukan dengan metode difusi cakram pada media MRS-A. Analisis data dilakukan menggunakan uji *One Way ANOVA* dan dilanjutkan dengan uji *post hoc LSD*. **Hasil:** Ekstrak rimpang lengkuas merah menunjukkan daya hambat terhadap *Lactobacillus acidophilus* pada seluruh konsentrasi uji. Zona hambat terbesar diperoleh pada konsentrasi 100% dan terkecil pada konsentrasi 20%. Kontrol negatif DMSO 10% tidak menunjukkan zona hambat sedangkan kontrol positif *chlorhexidine gluconate* 0,2% menghasilkan zona hambat yang lebih besar. Uji *One Way ANOVA* menunjukkan nilai  $p < 0,05$ . **Kesimpulan:** Ekstrak rimpang lengkuas merah pada konsentrasi 20%, 40%, 60%, 80%, dan 100% menunjukkan kemampuan dalam menghambat pertumbuhan bakteri *Lactobacillus acidophilus* ATCC 4356 dengan seluruh konsentrasi termasuk dalam kategori kekuatan daya hambat lemah.

**Kata kunci:** Rimpang lengkuas merah, *Alpinia galanga*, *Lactobacillus acidophilus*, antibakteri, karies gigi.



**ANTIBACTERIAL INHIBITION TEST OF RED GALANGAL RHIZOME  
EXTRACT (*Alpinia galanga* (L.) Willd) AGAINST BACTERIA  
*Lactobacillus acidophilus* ATCC 4356**

Shasya Nurul Aisya

***ABSTRACT***

**Background:** Dental caries is a multifactorial infectious disease characterized by damage to the hard tissues of the teeth due to acidogenic bacterial activity. *Lactobacillus acidophilus* plays an important role in the progression of caries due to its ability to produce acid and survive in acidic environments. The use of natural ingredients as antibacterial agents is one of the potential preventive approaches, one of which is red galangal rhizome (*Alpinia galanga* (L.) Willd) which is known to contain antibacterial bioactive compounds. **Objective:** This study aims to determine the antibacterial inhibition of red galangal rhizome extract against *Lactobacillus acidophilus* ATCC 4356 bacteria. **Methods:** This study is a *true laboratory experimental study with a post-test only design with control group*. Red galangal rhizome extract is made by maceration method using 96% ethanol solvent and diluted using 10% DMSO so that a concentration of 20%, 40%, 60%, 80%, and 100% is obtained. The antibacterial test was carried out by disc diffusion method on MRS-A media. Data analysis was carried out using *the One Way ANOVA test* and continued with *the post hoc LSD test*. **Results:** Red galangal rhizome extract showed inhibition against *Lactobacillus acidophilus* at all test concentrations. The largest inhibition zone is obtained at 100% concentration and the smallest at 20% concentration. Negative control of 10% DMSO did not show an inhibitory zone whereas a positive control of *chlorhexidine gluconate* 0.2% resulted in a larger inhibitory zone. The *One Way ANOVA test* showed a p value of < 0.05. **Conclusion:** Red galangal rhizome extract at concentrations of 20%, 40%, 60%, 80%, and 100% showed the ability to inhibit the growth of *Lactobacillus acidophilus* ATCC 4356 bacteria with all concentrations included in the category of weak inhibitory strength.

**Keywords:** Red galangal rhizome, *Alpinia galanga*, *Lactobacillus acidophilus*, antibacterial, dental caries.

