

## ABSTRAK

### ANALISIS FITOKIMIA DAN UJI AKTIVITAS ANTIBAKTERI FUNGI ENDOFIT DARI DAUN LEMPUYANG GAJAH (*Zingiber zerumbet* (L.) Roscoe ex Sm) YANG DIFERMENTASIKAN PADA MEDIA KEDELAI

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**Latar Belakang:** Tanaman lempuyang gajah (*Zingiber zerumbet*) dilaporkan berpotensi sebagai antibakteri. Fungi endofit merupakan alternatif penghasil senyawa bioaktif. Namun faktanya sekitar 70% klaster gen penyandi biosintesis tidak aktif dalam kondisi kultur laboratorium standar, sehingga perlu menerapkan strategi OSMAC (*One Strain MAny Compounds*). Penelitian ini bertujuan untuk mengisolasi dan mengidentifikasi fungi endofit dari daun *Z. zerumbet* dan mengevaluasi aktivitas antibakterinya.

**Metodologi:** Daun *Z. zerumbet* segar dan sehat dikultur pada media PDA hingga diperoleh isolat fungi murni. Isolat fungi diidentifikasi dengan metode PCR dan difermentasikan pada media kedelai dan beras (kontrol). Selanjutnya diekstraksi dengan EtOAc secara *shaking* dan dianalisis fitokimia dengan metode KLT dan HPLC. Selain itu, ekstrak fungi endofit diuji aktivitas antibakterinya terhadap *Staphylococcus aureus* dan *Escherichia coli* dengan metode difusi cakram Kirby-Bauer.

**Hasil:** Fungi endofit yang diisolasi dari daun *Z. zerumbet* teridentifikasi sebagai *Meyerozyma carpophila* strain H6.3. Ekstrak EtOAc fungi *M. carpophila* mengandung senyawa terpenoid berdasarkan profil KLT. Berdasarkan profil HPLC, peak ekstrak *M. carpophila* di media kedelai pada waktu retensi 25,339 menit memiliki spektrum UV yang berbeda. Namun demikian, ekstrak tersebut tidak dapat menghambat pertumbuhan bakteri *S. aureus* dan *E. coli* sebab termasuk kategori resisten menurut CLSI (2020).

**Kesimpulan:** Ekstrak fungi *M. carpophila* yang diisolasi dari daun lempuyang gajah (*Z. zerumbet*) dan difermentasikan pada media kedelai tidak menunjukkan aktivitas antibakteri.

**Kata Kunci:** Antibakteri, fungi endofit, *Meyerozyma carpophila*, OSMAC, *Zingiber zerumbet*.

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## ABSTRACT

### PHYTOCHEMICAL ANALYSIS AND ANTIBACTERIAL ACTIVITY OF ENDOPHYTIC FUNGI FROM LEMPUYANG GAJAH (*Zingiber zerumbet* (L.) Roscoe ex Sm) LEAVES FERMENTED ON SOYBEAN MEDIA

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**Background:** Lempuyang gajah (*Zingiber zerumbet*) is reported to have antibacterial potential. Endophytic fungi are an alternative way to produce bioactive compounds. However, in fact, about 70% of the biosynthetic coding gene clusters are inactive under standard laboratory culture conditions, so it is necessary to apply the OSMAC (One Strain, Many Compounds) strategy. This study aimed to isolate and identify endophytic fungi from *Z. zerumbet* leaves and evaluate their antibacterial activity.

**Method:** Fresh and healthy *Z. zerumbet* leaves were cultured on PDA media to obtain pure fungal isolates. Fungal isolates were identified by the PCR method and fermented on soybean and rice media (control). Furthermore, it was extracted by shaking EtOAc and analyzed for phytochemicals by TLC and HPLC methods. In addition, the endophytic fungi extract was tested for its antibacterial activity against *Staphylococcus aureus* and *Escherichia coli* by the Kirby-Bauer disk diffusion method.

**Results:** The endophytic fungi isolated from *Z. zerumbet* leaves were identified as *Meyerozyma carpophila* strain H6.3. The EtOAc fungus extract of *M. carpophila* contains terpenoid compounds based on the TLC profile. Based on the HPLC profile, the peak of *M. carpophila* extract in soybean media at a retention time of 25.339 minutes had a different UV spectra. However, the extract could not inhibit the growth of *S. aureus* and *E. coli* bacteria because they were included in the resistant category according to CLSI (2020).

**Conclusion:** The extract of the fungus *M. carpophila*, isolated from lempuyang gajah (*Z. zerumbet*) leaves and fermented in soybean media, did not show antibacterial activity.

**Keywords:** Antibacterial, endophytic fungi, *Meyerozyma carpophila*, OSMAC, *Zingiber zerumbet*.

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