

# THESIS

## **FORMULATION OF MOUTHWASH FROM PEPPERMINT EXTRACT (*Metha piperita L.*) AND GINGER EXTRACT (*Zingiber officinale Roscoe Var. amarum*) AS AN ANTIFUNGAL FOR *Candida albicans***



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## VALIDITY SHEET

It is hereby stated that the thesis with the title:

**FORMULATION OF MOUTHWASH FROM PEPPERMINT EXTRACT (*Metha piperita* L.) AND GINGER EXTRACT (*Zingiber officinale* Roscoe Var. *amarum*) AS AN ANTIFUNGAL AGAINST *Candida albicans***

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## ABSTRAK

### FORMULATION OF MOUTHWASH FROM PEPPERMINT EXTRACT (*Mentha piperita L.*) AND GINGER EXTRACT (*Zingiber officinale Roscoe Var.* *amarum*) AS AN ANTIFUNGAL AGAINST *Candida albicans*

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Penggunaan obat kumur berbasis alkohol dalam jangka panjang dapat menimbulkan sejumlah masalah kesehatan, seperti detasemen epitel, ulserasi mukosa, gingivitis, petechiae, dan lesi putih. Selain itu, penggunaan yang berkepanjangan juga berisiko menyebabkan resistensi *Candida albicans* terhadap obat antijamur, sehingga perlu adanya penelitian obat kumur ekstrak peppermint dan jahe emprit bertujuan sebagai alternatif alami yang aman dan efektif. Ekstrak peppermint mengandung menthol dengan sifat antijamur, sedangkan jahe emprit mengandung gingerol yang dapat menghambat metabolisme jamur pada *Candida albicans*. Penelitian obat kumur kombinasi ekstrak peppermint dan jahe emprit dilakukan secara Experiment al di laboratorium dengan metode maserasi menggunakan etanol 96%. Formulasi obat kumur terdiri dari empat variasi: Formula 1 (peppermint 5%: jahe emprit 5%), Formula 2 (peppermint 10%: jahe 5%), Formula 3 (peppermint 5%: jahe emprit 10%), dan Formula 4 (peppermint 10%: jahe emprit 10%). Evaluasi pada obat kumur kombinasi peppermint dan jahe emprit meliputi pengujian fisikokimia, seperti pH (standar SNI 12-3524-1995), viskositas (standar SNI 16-4399-1995), homogenitas, organoleptik, serta uji daya hambat terhadap *Candida albicans* menggunakan metode difusi cakram. Hasil penelitian obat kumur kombinasi ekstrak peppermint dan jahe emprit menunjukkan bahwa semua formula memenuhi standar SNI, dengan pH (5,68-7,00) dan viskositas (0,00-1,2 cP). Semua formula memiliki potensi dalam menghambat *Candida albicans*, dengan Formula 3 memberikan zona hambat terbesar dan sifat organoleptik baik, seperti rasa mint segar dengan diikuti rasa jahe, aroma mint, dan warna kuning kecoklatan bening. Kombinasi ekstrak peppermint dan jahe emprit menunjukkan potensi besar sebagai bahan alami untuk obat kumur yang efektif melawan infeksi jamur.

**Kata kunci:** Antifungi, *Candida albicans*, ekstrak jahe, ekstrak peppermint, obat kumur.

## ABSTRACT

The long-term use of alcohol-based mouthwash can cause several health issues, such as epithelial detachment, mucosal ulceration, gingivitis, petechiae, and white lesions. In addition, prolonged use also poses a risk of *Candida albicans* developing resistance to antifungal drugs, making it necessary to research mouthwash with peppermint and ginger extracts as a safe and effective natural alternative. Peppermint extract contains menthol with antifungal properties, while ginger contains gingerol, which can inhibit the metabolism of fungi in *Candida albicans*. The research on mouthwash combining peppermint extract and ginger was conducted experimentally in the laboratory using the maceration method with 96% ethanol. The mouthwash formulations consist of four variations: Formula 1 (5% peppermint: 5% ginger), Formula 2 (10% peppermint: 5% ginger), Formula 3 (5% peppermint: 10% ginger), and Formula 4 (10% peppermint: 10% ginger). The evaluation of the mouthwash combination of peppermint and ginger includes physicochemical tests, such as pH (SNI standard 12-3524-1995), viscosity (SNI standard 16-4399-1995), homogeneity, organoleptic properties, and inhibition tests against *Candida albicans* using the disk diffusion method. The results of the study on the mouthwash combining peppermint and ginger extracts show that all formulas meet SNI standards, with a pH (5.68-7.00) and viscosity (0.00-1.2 cP). All formulas have the potential to inhibit *Candida albicans*, with Formula 3 providing the largest inhibition zone and good organoleptic properties, Mint, followed by a hint of ginger aroma taste, peppermint aroma, and Clear brownish yellow color. The combination of peppermint extract and ginger shows great potential as a natural ingredient for an effective mouthwash against fungal infections. Therefore, further research is needed to test the stability of the formulation, long-term toxicity, and in-vivo effectiveness to support the development of pharmaceutical preparations.

**Keywords:** Antifungal, *Candida albicans*, ginger extract, peppermint extract, mouthwash.

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## STATEMENT OF RESEARCH ORIGINALITY

With this, I,

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Research title : Formulation of Mouthwash from Peppermint Leaf Extract (*Metha pipereta L.*) and Ginger Extract (*Zingiber officinale Roscoe Var. amarum*) as an Antifungal Against *Candida albicans*.

I sincerely declare that the research presented in this thesis is originally my own work and not the work of other researchers for a different degree. Furthermore, this thesis has never been published before, except for some parts with other references.

If it is later found that this work is plagiarized, I am ready to face administrative and academic sanctions.

Ponorogo, 29 November 2024

Author,



Yabda Alib Oktaria



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Ponorogo, 1 February 2025

Written,



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