

**UJI AKTIVITAS ANTIJAMUR PEPTIDA BIOAKTIF DARI
MIKROALGA *Chlorella vulgaris* TERHADAP JAMUR
Candida albicans DAN *Malassezia furfur***

SKRIPSI

**Diajukan sebagai salah satu syarat untuk memperoleh
Gelar Sarjana Farmasi**



**SAJIDA AL FALAH
31121175**

**PROGRAM STUDI S-1 FARMASI
FAKULTAS FARMASI
UNIVERSITAS BAKTI TUNAS HUSADA
TASIKMALAYA
JULI 2025**

Abstrak

Latar belakang : Meningkatnya resistensi terhadap obat antijamur konvensional pada *Candida albicans* dan *Malassezia furfur* mendorong pencarian agen antijamur alternatif. *Chlorella vulgaris*, mikroalga kaya protein dan peptida, berpotensi sebagai sumber agen antijamur, namun aktivitas peptida bioaktifnya belum banyak diteliti. **Tujuan:** Mengetahui keberadaan peptida bioaktif *Chlorella vulgaris* berdasarkan gugus fungsi menggunakan FTIR serta mengevaluasi aktivitas antijamurnya terhadap *Candida albicans* dan *Malassezia furfur*. **Metode:** Melibatkan ekstraksi protein dari *Chlorella vulgaris*, pemurnian dan isolasi peptida bioaktif melalui hidrolisis enzimatis dan dialisis serta karakterisasi menggunakan FTIR. Aktivitas antijamur diuji dengan metode difusi cakram, serta ditentukan Konsentrasi Hambat Minimum (KHM) dan Konsentrasi Bunuh Minimum (KBM). **Hasil:** Ekstrak sebanyak 1000 mL menunjukkan keberadaan protein melalui uji biuret. Protein hasil pemurnian diperoleh 1,426 gram. Isolat peptida hasil enzimatisasi 1,3311 gram dengan konsentrasi larutan 1898 ppm, mengandung gugus amida yang menunjukkan peptida bioaktif dan memiliki aktivitas antijamur. **Kesimpulan:** Isolat peptida bioaktif berhasil diisolasi dengan metode enzimatisasi dibuktikan dengan gugus amida (N-H) dan ikatan karboksil (C=O). Peptida bioaktif *Chlorella vulgaris* menghambat pertumbuhan *Candida albicans* dan *Malassezia furfur*, ditandai zona hambat pada uji difusi cakram. Nilai KHM dan KBM menunjukkan peptida efektif pada konsentrasi relatif tinggi, menandakan potensi antijamur yang kuat.

Kata Kunci: *Chlorella vulgaris*, peptida bioaktif, antijamur.

Abstract

Background: The increasing resistance to conventional antifungal drugs in *Candida albicans* and *Malassezia furfur* has prompted the search for alternative antifungal agents. *Chlorella vulgaris*, a protein- and peptide-rich microalga, has potential as a source of antifungal agents, but the activity of its bioactive peptides has not been extensively studied. **Objective:** To determine the presence of bioactive peptides in *Chlorella vulgaris* based on functional groups using FTIR and to evaluate their antifungal activity against *Candida albicans* and *Malassezia furfur*. **Methods:** Involved protein extraction from *Chlorella vulgaris*, purification and isolation of bioactive peptides through enzymatic hydrolysis and dialysis, and characterization using FTIR. Antifungal activity was tested using the disk diffusion method, and the Minimum Inhibitory Concentration (MIC) and Minimum Bactericidal Concentration (MBC) were determined. **Results:** An extract of 1000 mL showed the presence of protein through the biuret test. The purified protein obtained was 1.426 grams. The enzymatic isolation of peptides yielded 1.3311 grams with a solution concentration of 1898 ppm, containing amide groups indicating bioactive peptides and exhibiting antifungal activity. **Conclusion:** Bioactive peptide isolates were successfully isolated using enzymatic hydrolysis, as evidenced by amide groups (N-H) and carboxyl bonds (C=O). Bioactive peptides from *Chlorella vulgaris* inhibit the growth of *Candida albicans* and *Malassezia furfur*, as indicated by inhibition zones in the disk diffusion test. The MIC and MBC values indicate that the peptides are effective at relatively high concentrations, indicating strong antifungal potential.

Keywords: *Chlorella vulgaris*, bioactive peptides, antifungal.