

ABSTRAK

Radikal bebas dari metabolisme dan faktor eksternal dapat merusak sel, memicu peradangan, stres oksidatif, serta penyakit kronis dan kanker. Antioksidan dibutuhkan untuk mengurangi dampak tersebut. Daun terubuk (*Saccharum edule* (Hask)) diketahui memiliki potensi sebagai sumber antioksidan alami, namun belum banyak diteliti terutama setelah proses fermentasi. Fermentasi sendiri dapat meningkatkan senyawa bioaktif dan aktivitas farmakologis bahan alam. Penelitian ini bertujuan untuk mengidentifikasi senyawa metabolit hasil fermentasi daun terubuk menggunakan instrumen LC-HRMS serta mengevaluasi aktivitas antioksidannya berdasarkan nilai IC_{50} . Metode yang digunakan meliputi fermentasi menggunakan jamur *Aspergillus oryzae*, fraksinasi menggunakan pelarut n-heksana dan etil asetat, identifikasi senyawa menggunakan LC-HRMS, serta uji antioksidan metode DPPH. Hasil LC-HRMS menunjukkan keberadaan berbagai senyawa bioaktif seperti N-(p-coumaroyl)serotonin dan malvidin yang dikenal memiliki aktivitas antioksidan. Uji DPPH menunjukkan bahwa fraksi etil asetat memiliki nilai IC_{50} sebesar 13,765 $\mu\text{g/mL}$, sedangkan fraksi n-heksana sebesar 68,57 $\mu\text{g/mL}$. Berdasarkan nilai IC_{50} tersebut, fraksi etil asetat menunjukkan aktivitas antioksidan yang lebih kuat dibandingkan fraksi n-heksana.

Kata Kunci: Fermentasi, *Saccharum edule* (Hask), LC-HRMS, antioksidan, DPPH, IC_{50} .

ABSTRACT

Free radicals from metabolism and external factors can damage cells, trigger inflammation, oxidative stress, chronic diseases, and cancer. Antioxidants are needed to reduce these effects. Terubuk leaves (*Saccharum edule* (Hask)) are known to have potential as a natural antioxidant source, but have not been extensively studied, especially after fermentation. Fermentation itself can enhance bioactive compounds and the pharmacological activity of natural materials. This study aims to identify the metabolic compounds resulting from sugarcane leaf fermentation using LC-HRMS instruments and evaluate their antioxidant activity based on IC_{50} values. The methods used include fermentation using *Aspergillus oryzae* fungus, fractionation using *n*-hexane and ethyl acetate solvents, compound identification using LC-HRMS, and antioxidant testing using the DPPH method. LC-HRMS results showed the presence of various bioactive compounds such as *N*-(*p*-coumaroyl)serotonin and malvidin, which are known to have antioxidant activity. The DPPH assay showed that the ethyl acetate fraction had an IC_{50} value of 13.765 $\mu\text{g/mL}$, while the *n*-hexane fraction had an IC_{50} value of 68.57 $\mu\text{g/mL}$. Based on these IC_{50} values, the ethyl acetate fraction demonstrated stronger antioxidant activity compared to the *n*-hexane fraction.

Keywords: Fermentation, *Saccharum edule* (Hask), LC-HRMS, antioxidant, DPPH, IC_{50} .



KARAWANG