

ABSTRAK

Peptida bioaktif memiliki banyak manfaat untuk kesehatan manusia dan mempunyai kemampuan untuk mencegah penyakit tertentu dengan aktivitas seperti inhibitor ACE. Biopeptida dapat bersumber dari *Dunaliella salina* yang berpotensi sebagai sumber biopeptida karena mempunyai kadar protein yang tinggi. Penelitian ini bertujuan mencari biopeptida dengan aktivitas inhibitor ACE pada *Dunaliella salina* dilakukan dari sumber protein *rubisco*, HSP70, ATP *synthase subunit beta* dan 50S *ribosomal*. Prediksi biopeptida, pemecahan peptida oleh enzim, analisis ADMET, *docking* molekuler dan analisis reaktivitas biopeptida dilakukan dengan metode *in silico* karena mempertimbangkan biaya dan waktu penelitian. Hasil penelitian menunjukkan bahwa kehadiran biopeptida dari *D. salina* dapat bersaing dengan *Zea mays*. Lima biopeptida unggul yang memiliki nilai terbaik dalam uji *binding affinity*, konstanta inhibitor, dan teori densitas fungsional adalah AY, FG, IY, LQ, dan VY. Biopeptida unggul didapatkan dengan pemecahan menggunakan enzim *thermolysin* tunggal. Kelima biopeptida unggul ini memiliki aktivitas inhibitor ACE dan antioksidan teoritis yang sangat penting dalam pencegahan dan penanganan hipertensi.

Kata kunci: Antioksidan, Biopeptida, Hipertensi, Inhibitor ACE, *In silico*

ABSTRACT

Bioactive peptides have many benefits for human health and have the ability to prevent certain diseases with activities such as ACE. Biopeptides can be sourced from Dunaliella salina which has the potential as a source of biopeptides because it has a high protein content. The aim of this research is to find biopeptides with ACE inhibitory activity in Dunaliella salina from sources of protein rubisco, HSP70, ATP synthase beta subunit and 50S ribosomal. Prediction of biopeptides, breakdown of peptides by enzymes, ADMET analysis, molecular docking and analysis of DFT biopeptide reactivity were carried out by in silico method. The research was conducted as in silico research considering the cost and time of the research. This research showed that the presence of biopeptides from D. salina can compete with Zea mays. Five superior biopeptides which had the best scores in the binding affinity test, inhibitor constant, and density functional theory are were AY, FG, IY, LQ, and VY. Superior biopeptides were obtained by breakdown using a single thermolysin enzyme. These five superior biopeptides have ACE inhibitory activity and theoretical antioxidants that are very important in the prevention and treatment of hypertension.

Keywords: Antioxidant, Biopeptide, Hypertension, ACE Inhibitor, In silico