

DEVI DWI NINGRUM NIM 210351100022 Indeks Ekologi Tumbuhan Air dan Makroalga di Pesisir Galis Gili Genting serta Potensi Senyawa Aktif sebagai Antihipertensi secara *In silico*. Dibawah bimbingan : **AB. Chandra, M. Si**

ABSTRAK

Tumbuhan air dan makroalga di pesisir Galis, Gili Genting, memiliki potensi besar dalam bidang farmakologi, khususnya sebagai kandidat obat antihipertensi. Penelitian ini bertujuan untuk mengidentifikasi jenis tumbuhan air dan makroalga serta menganalisis potensi senyawa aktif yang dikandungnya melalui uji *in silico*. Penelitian dilakukan di perairan Pantai Sahara, Gili Genting, pada tiga titik stasiun. Pengambilan sampel dilakukan secara mingguan meliputi pemantauan kualitas air (pH, suhu, TDS, dan salinitas) serta identifikasi jenis tumbuhan air dan makroalga menggunakan metode garis transek sepanjang 100 meter ke arah laut dengan plot kuadrat 1×1 meter. Uji *in silico* dilakukan untuk mengevaluasi potensi senyawa bioaktif sebagai kandidat obat antihipertensi. Hasil identifikasi menunjukkan satu jenis tumbuhan air yaitu *Thalassia hemprichii* dan enam spesies makroalga yang terdiri dari divisi Phaeophyta (*Padina australis*, *Sargassum polycystum*, *Turbinaria ornata*), Chlorophyta (*Halimeda macroloba*, *Chaetomorpha antennina*), dan Rhodophyta (*Acanthophora spicifera*). Nilai indeks keanekaragaman diperoleh sebesar 1,33; 1,20; dan 0,80. Indeks keseragaman sebesar 0,77; 0,81; dan 0,61, sedangkan indeks dominansi sebesar 0,29; 0,36; dan 0,56. Hasil uji *in silico* menunjukkan bahwa senyawa apigenin dari *Thalassia hemprichii* memiliki afinitas pengikatan tertinggi terhadap enzim ACE dan berpotensi sebagai antihipertensi dengan nilai -8,9 kcal/mol, diikuti oleh quercetin dari *Chaetomorpha antennina* (-8,8 kcal/mol) dan epitaondiol dari *Padina australis* (-8,7 kcal/mol).

Kata kunci: Antihipertensi, *in silico*, Makroalga, Tumbuhan air

DEVI DWI NINGRUM Student ID: 210351100022 Ecological Index of Aquatic Plants and Macroalgae on the Coast of Galis, Gili Genting, and the Potential of Their Active Compounds as Antihypertensive Agents through In Silico Study. Supervisor: **AB. Chandra, M.Si**

ABSTRACT

Aquatic plants and macroalgae along the coast of Galis, Gili Genting, hold significant pharmacological potential, particularly as candidates for antihypertensive drugs. This study aims to identify the species of aquatic plants and macroalgae and analyze the potential of their active compounds through in silico testing. The research was conducted in the coastal waters of Sahara Beach, Gili Genting, at three sampling stations. Samples were collected weekly, involving water quality monitoring (pH, temperature, TDS, and salinity) and identification of aquatic plant and macroalgae species using a 100-meter transect line method toward the sea with 1×1 meter quadrat plots. The in silico analysis was performed to evaluate the bioactive compounds' potential as antihypertensive agents. Identification results revealed one aquatic plant species, *Thalassia hemprichii*, and six macroalgae species from the divisions Phaeophyta (*Padina australis*, *Sargassum polycystum*, *Turbinaria ornata*), Chlorophyta (*Halimeda macroloba*, *Chaetomorpha antennina*), and Rhodophyta (*Acanthophora spicifera*). The biodiversity index values were 1.33, 1.20, and 0.80. The evenness index values were 0.77, 0.81, and 0.61, while the dominance index values were 0.29, 0.36, and 0.56, respectively. In silico results showed that apigenin from *Thalassia hemprichii* had the highest binding affinity to the ACE enzyme with a value of -8.9 kcal/mol, followed by quercetin from *Chaetomorpha antennina* (-8.8 kcal/mol), and epitaondiol from *Padina australis* (-8.7 kcal/mol).

Keywords: Antihypertensive, in silico, Macroalgae, Aquatic plants