ABSTRAK

STUDI ETNOBOTANI DAN ANALISIS *IN SILICO* POTENSI TANAMAN ANTIKANKER TERHADAP KANKER PAYUDARA HER2 POSITIF MENGGUNAKAN PENDEKATAN *MOLECULAR DOCKING*

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Indonesia memiliki keanekaragaman tanaman herbal obat yang sangat kaya, namun sebagian besar potensinya belum dimanfaatkan secara optimal. Tanaman herbal banyak digunakan masyarakat untuk mengobati berbagai penyakit, termasuk kanker payudara. Saat ini, pengobatan kanker payudara masih berfokus pada metode konvensional yang memiliki kelemahan seperti efek samping signifikan, tingkat keberhasilan yang rendah, dan biaya tinggi. Oleh karena itu, penelitian ini bertujuan mengkaji dan mendokumentasikan pemanfaatan tanaman antikanker secara etnobotani serta menganalisis potensi senyawa aktif sebagai kandidat obat kanker payudara. Penelitian dilakukan pada bulan Maret hingga Juli 2025 di lima desa Kecamatan Palas, Kabupaten Lampung Selatan: Desa Bangunan, Bali Agung, Pulau Tengah, Bumi Daya, dan Palas Aji. Kajian etnobotani menggunakan metode studi kasus dengan teknik *snowball sampling* dan wawancara semi terstruktur kepada 25 responden. Identifikasi jenis tanaman dilakukan dengan membandingkan karakter morfologi dan studi literatur, kemudian data dianalisis menggunakan *Frequency of Citation*, *Relative Frequency of Citation*, dan *Use Value* untuk menilai relevansi tanaman bagi masyarakat. Hasil etnobotani menunjukkan 30 spesies tanaman yang sering digunakan dalam pengobatan tradisional kanker payudara. Lima spesies terpilih dianalisis lebih lanjut melalui simulasi molecular docking untuk menguji potensi senyawa alami sebagai inhibitor protein *Human Epidermal Growth Factor Receptor* 2 (HER2) yang berperan pada kanker payudara HER2 positif. Analisis *in silico* menghasilkan 7 dari 136 senyawa dengan afinitas tertinggi antara –9,6 hingga –10 kkal/mol terhadap HER2, temuan ini membuktikan adanya potensi senyawa tersebut sebagai kandidat obat antikanker payudara HER2 positif sekaligus membuktikan keberadaan senyawa antikanker dari tanaman-tanaman yang digunakan.dalam pengobatan tradisional kanker di masyarakat.

Kata kunci: Etnobotani, *Breast Cancer*, HER2, *in Silico, Molecular Docking.*

ABSTRACT

ETHNOBOTANICAL STUDY AND IN SILICO ANALYSIS OF THE ANTICANCER POTENTIAL OF PLANTS AGAINST HER2-POSITIVE BREAST CANCER USING A MOLECULAR DOCKING APPROACH

By

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Indonesia has a very rich diversity of medicinal herbs; however, most of their potential remains underutilized. Herbal plants are widely used by local communities to treat various diseases, including breast cancer. Currently, breast cancer treatment primarily relies on conventional methods that have drawbacks such as significant side effects, low success rates, and high costs. Therefore, this study aims to document the ethnobotanical use of anticancer plants and analyze the potential of their active compounds as candidates for breast cancer drugs. The research was conducted from March to July 2025 in five villages in Palas District, South Lampung Regency: Building Village, Bali Agung, Pulau Tengah, Bumi Daya, and Palas Aji. The ethnobotanical study employed a case study method with snowball sampling and semi-structured interviews involving 25 respondents. Plant identification was performed by comparing morphological characteristics and consulting the literature. The data were analyzed using Frequency of Citation, Relative Frequency of Citation, and Use Value indices to evaluate the relevance of plants to the community. The ethnobotanical results identified 30 plant species frequently used in the traditional treatment of breast cancer. Five selected species were further analyzed through molecular docking simulations to evaluate the potential of their natural compounds as inhibitors of Human Epidermal Growth Factor Receptor 2 (HER2), which is involved in HER2-positive breast cancer. In silico analysis identified seven out of 136 compounds with the highest binding affinities ranging from –9.6 to –10 kcal/mol against HER2. These findings demonstrate the potential of these compounds as candidates for HER2-positive breast cancer drugs and confirm the presence of anticancer compounds in plants traditionally used by the community for cancer treatment.

Keywords: Ethnobotany, Breast Cancer, HER2, in Silico, Molecular Docking