

INTISARI

CANTIKA HUSNA NOVERA, 2024, NETWORK PHARMACOLOGY DAUN INGGU (*Ruta graveolens linn*) DAN DAUN JAMBU METE (*Anacardium occidentale linn*) TERHADAP KANKER PAYUDARA (*Carcinoma Mammæ*), PROPOSAL SKRIPSI, PROGRAM STUDI S1 FARMASI, FAKULTAS FARMASI, UNIVERSITAS SETIA BUDI, SURAKARTA. Dibimbing oleh Dr. apt. Rina Herowati, M.Si. dan Hery Muhamad Ansory, S.Pd., M.Sc.

Kanker payudara adalah suatu jenis tumor ganas yang tumbuh dalam jaringan payudara. Tumor tersebut dapat berkembang dan menyebar ke bagian lain di seluruh tubuh, hal tersebut disebabkan oleh mutasi gen yang diturunkan secara genetik. Daun inggu dan daun jambu mete diprediksi memiliki khasiat sebagai antikanker pada uji praklinis secara *in vivo* dan *in vitro*. Tujuan penelitian ini yaitu memprediksi profil *network pharmacology* senyawa kimia daun inggu dan daun jambu mete terhadap protein target kanker payudara.

Penelitian ini menggunakan metode *network pharmacology*. Pengumpulan data aktivitas senyawa kimia daun inggu dan daun jambu mete menggunakan KNApSAcK dan beberapa jurnal penelitian. PubChem untuk mengetahui aktivitas senyawa. KEGG Pathway untuk mengidentifikasi protein target. UniProt untuk memvalidasi protein target. String untuk mendapatkan interaksi antar protein. Stitch, SwissTargetPrediction, SEA, dan SuperPred untuk memprediksi hubungan senyawa kimia-protein target. Perangkat lunak Cytoscape untuk memvisualisasikan profil *network pharmacology* daun inggu dan daun jambu mete terhadap protein target kanker payudara sebagai antikanker.

Visualisasi profil *network pharmacology* yang terbentuk didapatkan protein target kanker payudara yang terlibat dengan senyawa tanaman daun inggu dan daun jambu mete yaitu APC, AR, AKT1, ARAF, BAX, CCND1, CTNNB1, EP300, ERBB2, ESR1, ESR2, SRC, FGF2, KDR, FGF21, FRAT1, KDR, LYN, MAPK1, MMP9, NOS3, PIK3CA, dan PRKCA. Senyawa yang memiliki aktivitas dengan target protein patofisiologi kanker payudara sebanyak 17 senyawa yaitu *chalepin*, *graveoline*, *isorhamnetin*, *kaempferol*, *kokusagine*, *quercetin*, *skimmianine*, *kaempferol* pada daun inggu, serta *myricetin*, *epicatechin*, *anacardic acid*, *anthocyanin*, *occidentoside*, *alpha-pinene*, *alpha-ylangene*, *beta-caryophyllene* pada daun jambu mete.

Kata kunci: kanker payudara, daun inggu, daun jambu mete, *network pharmacology*, *cytoscape*

ABSTRACT

CANTIKA HUSNA NOVERA, 2024, NETWORK PHARMACOLOGY OF INGGU LEAVES (*Ruta graveolens* linn) AND CASHEW LEAVES (*Anacardium occidentale* linn) AGAINST PROTEIN TARGETS IN BREAST CANCER (*Carcinoma Mammæ*), THESIS, UNDERGRADUATE STUDY PROGRAM OF PHARMACY, FACULTY OF PHARMACY, SETIA BUDI UNIVERSITY, SURAKARTA. Supervised by Dr. apt. Rina Herowati, M.Si. and Hery Muhamad Ansory, S.Pd., M.Sc.

Breast cancer is a type of malignant tumor that grows in breast tissue. The tumor can develop and spread to other parts of the body, this is caused by genetically inherited gene mutations. Ingu leaves and cashew leaves are predicted to have anticancer properties in preclinical tests in vivo and in vitro. The purpose of this study was to predict the network pharmacology profile of chemical compounds of inggu leaves and cashew leaves against breast cancer target proteins.

This study uses the network pharmacology method. Data collection of chemical compound activity of inggu leaves and cashew leaves using KNApSAcK and several research journals. PubChem to determine compound activity. KEGG Pathway to identify target proteins. UniProt to validate target proteins. String to get interactions between proteins. Stitch, SwissTargetPrediction, SEA, and SuperPred to predict the relationship between chemical compounds and target proteins. Cytoscape software to visualize the network pharmacology profile of inggu leaves and cashew leaves against breast cancer target proteins as anticancer.

Visualization of the network pharmacology profile formed obtained breast cancer target proteins involved with compounds of inggu leaves and cashew leaves, namely APC, AR, AKT1, ARAF, BAX, CCND1, CTNNB1, EP300, ERBB2, ESR1, ESR2, SRC, FGF2, KDR, FGF21, FRAT1, KDR, LYN, MAPK1, MMP9, NOS3, PIK3CA, and PRKCA. Compounds that have activity with breast cancer pathophysiology protein targets are 17 compounds, namely chalepin, graveoline, isorhamnetin, kaempferol, kokusagine, quercetin, skimmianine, kaempferol in inggu leaves, and myricetin, epicatechin, anacardic acid, anthocyanin, occidentoside, alpha-pinene, alpha-ylangene, beta-caryophyllene in cashew leaves.

Key words: breast cancer, inggu leaves, cashew leaves, network pharmacology, cytoscape