

ABSTRAK

NAUFALIA AZKA ROZANA, 2023. NETWORK PHARMACOLOGY TANAMAN SELEDRI (*Apium graveolens*) DAN BUAH MENGKUDU (*Morinda citrifolia* L) SEBAGAI ANTIHIPERTENSI, SKRIPSI, PROGRAM STUDI S1 FARMASI, FAKULTAS FARMASI, UNIVERSITAS SETIA BUDI, SURAKARTA. Dibimbing oleh Dr. Apt. Rina Herowati, S.Si., M.Si. dan Apt. Dwi Ningsih, S.Si., M.Farm.

Hipertensi adalah peningkatan tekanan darah sistolik lebih dari 140 mmHg dan tekanan darah diastolik lebih dari 90 mmHg. Tanaman seledri dan buah mengkudu berpotensi sebagai antihipertensi. Tujuan penelitian untuk mengetahui protein target yang diprediksi menjadi target kerja senyawa seledri dan buah mengkudu sebagai antihipertensi, mengetahui profil farmakologi kandungan senyawa seledri dan buah mengkudu pada protein target hipertensi.

Penelitian ini menggunakan metode *network pharmacology*. Pengumpulan data kandungan senyawa kimia tumbuhan menggunakan KNApSAcK, IJAH *Analytic* dan jurnal penelitian. Data bioaktivitas senyawa diperoleh dari *PubChem*. Protein target hipertensi diperoleh dari *KEGG Pathway* dan jurnal penelitian. Validasi nama gen menggunakan *web server GeneCard* dan *UniProt*. Interaksi protein-protein menggunakan *String*. Prediksi protein target menggunakan STP, SEA, dan Superpred. *Cytoscape* digunakan untuk memvisualisasikan interaksi protein-protein dan interaksi senyawa-protein.

Visualisasi profil *network pharmacology* protein target yang terlibat dalam patofisiologi hipertensi dengan senyawa tanaman seledri dan buah mengkudu adalah ACE2, PREP, MME, PRCP, CTSG, EDN1, LNPEP, CTSB, REN, ACE, ANPEP, AGT, AGTR1, dan AGTR2. Kandungan senyawa *apigenin, luteolin, caffeic acid, quercetin, bergaptan, celerin, cumene, graveobioside B, methoxalen, apiuomoside, p-cymene, celerioside A, linoleic acid, graveobioside A, ostenol, quercitrin, isopimpinellin, isoimperatorin, apigravin, palmitic acid, myristic acid, oleic acid, 3-n-butylphtalide* pada seledri dan kandungan senyawa *kaemferol, quercetin, luteolin, robinetin, isorhamnetin, saponin, limonene, phytol, asperulosidic acid, isoscopoletin, ursolic acid, fisetin, asperuloside* pada buah mengkudu dapat terbentuk *network pharmacology* dengan protein target hipertensi.

Kata kunci : hipertensi, seledri, buah mengkudu, *network pharmacology*

ABSTRACT

NAUFALIA AZKA ROZANA, 2023. NETWORK PHARMACOLOGY OF CELERY (*Apium graveolens*) AND NONI FRUIT (*Morinda citrifolia* L) AS ANTIHYPERTENSION, THESIS, PHARMACY STUDY PROGRAM, FACULTY OF PHARMACY, SETIA BUDI UNIVERSITY, SURAKARTA. Supervised by Dr. Apt. Rina Herowati, S.Si., M.Si. and Apt. Dwi Ningsih, S.Si., M.Farm.

Hypertension is an increase in systolic blood pressure of more than 140 mmHg and diastolic blood pressure of more than 90 mmHg. Celery and noni fruit have potential as antihypertensives. The aim of the research is to determine the target protein which is predicted to be the target of action of celery and noni fruit compounds as antihypertension, to find out the pharmacological profile of the content of celery and noni fruit compounds in the hypertension target protein.

This research uses the network pharmacology method. Data collection on plant chemical compound content used KNApSACk, IAH Analytic and research journals. Compound bioactivity data were obtained from PubChem. Hypertension target proteins were obtained from KEGG Pathway and research journals. Validate gene names using the GeneCard and UniProt web servers. Protein-protein interactions using Strings. Target protein prediction using STP, SEA, and Superpred. Cytoscape was used to visualize protein-protein interactions and compound-protein interactions.

Visualization of the network pharmacology profile of target proteins involved in the pathophysiology of hypertension with celery and noni fruit plant compounds are ACE2, PREP, MME, PRCP, CTSG, EDN1, LNPEP, CTSB, REN, ACE, ANPEP, AGT, AGTR1, and AGTR2. Compounds contain apigenin, luteolin, caffeic acid, quercetin, bergapten, celerin, cumene, graveobioside B, methoxalen, apiuomoside, p-cymene, celerioside A, linoleic acid, graveobioside A, osthonol, quercitrin, isopimpinellin, isoimperatorin, apigravin, palmitic acid, myristic acid, oleic acid, 3-n-butylphthalide in celery and the compounds kaemferol, quercetin, luteolin, robinetin, isorhamnetin, saponin, limonene, phytol, asperulosidic acid, isoscopoletin, ursolic acid, fisetin, asperuloside in noni fruit can form a network pharmacology with hypertension target proteins.

Keyword : hypertension, celery, noni fruits, network pharmacology