

ABSTRAK

GAUDENCIA FEBY PUTRI LISTYANTI, 2023, *NETWORK PHARMACOLOGY* ANGGUR (*Vitis vinifera* L.) DAN JERUK NIPIS (*Citrus aurantium* L.) TERHADAP PENYAKIT PARKINSON, SKRIPSI, FAKULTAS FARMASI, UNIVERSITAS SETIA BUDI, SURAKARTA. Dibimbing oleh Dr. apt. Rina Herowati, M.Si. dan apt. Yane Dila Keswara, M.Sc.

Tanaman anggur dan jeruk nipis diprediksi memiliki khasiat sebagai neuroprotektif dan antiparkinson. Tujuan penelitian ini untuk mengetahui jumlah protein target yang terlibat dalam patofisiologi Parkinson, mengetahui jumlah protein yang diprediksi menjadi target kerja dari senyawa anggur dan jeruk nipis sebagai antiparkinson, serta mengetahui profil *network pharmacology* kandungan senyawa kimia anggur dan jeruk nipis terhadap protein target Parkinson.

Penelitian ini menggunakan metode *network pharmacology*. Pengumpulan data kandungan senyawa kimia tanaman anggur dan jeruk menggunakan KNApSAcK, dan jurnal penelitian. Protein target dan gen yang terlibat dalam patofisiologi Parkinson diidentifikasi menggunakan KEGG *pathway* dan jurnal penelitian. Protein target dilakukan validasi nama gen menggunakan UniProt. Identifikasi interaksi protein-protein menggunakan STRING. Skrining zat aktif terhadap protein target dengan Pubchem. Prediksi protein target dari senyawa bioaktif menggunakan Swiss Target Prediction, SEA, dan SuperPRED. Visualisasi *network pharmacology* dari interaksi protein-protein dan interaksi senyawa-protein menggunakan Cytoscape.

Hasil visualisasi menunjukkan bahwa terdapat 8 kandungan senyawa kimia tanaman anggur dan 13 senyawa tanaman jeruk nipis yang saling membentuk *network* dengan 29 protein target yang terlibat dalam patofisiologi Parkinson. Terdapat 17 protein target yang diprediksi menjadi target kerja dari kandungan senyawa kimia anggur dan jeruk nipis yang saling berinteraksi dengan protein target sesuai jalur KEGG *pathway* Parkinson dan dapat membentuk *network pharmacology*.

Kata kunci: parkinson, anggur, jeruk, *network pharmacology*, *cytoscape*

ABSTRACT

GAUDENCIA FEBY PUTRI LISTYANTI, 2023, NETWORK PHARMACOLOGY OF GRAPES (*Vitis vinifera* L.) AND LIME (*Citrus Aurantium* L.) ON PARKINSON'S DISEASE, THESIS, FACULTY OF PHARMACY, SETIA BUDI UNIVERSITY, SURAKARTA. Supervised by Dr. apt. Rina Herowati, M.Si. and apt. Yane Dila Keswara, M.Sc.

Grapes and lime plants are predicted to have neuroprotective and antiparkinsonian properties. The purpose of this study was to determine the number of target proteins involved in Parkinson's pathophysiology, to determine the number of proteins predicted to be the target of action of grape and lime compounds as antiparkinsonians, and to determine the network pharmacology profile of the chemical compound of grapes and limes against Parkinson's target proteins.

This study used the network pharmacology method. Collecting data on the chemical compounds content of grape and lime plants used KNApSACk, and research journals. Target proteins and genes involved in the pathophysiology of Parkinson's disease were identified using the KEGG pathway and research journals. Protein-protein interaction used STRING. Validated the protein obtained using UniProt. Screening of active substances against target proteins with Pubchem. Target protein prediction from bioactive compounds used Swiss Target Prediction, SEA, and SuperPRED. Network pharmacology visualization of protein-protein interactions and compound-protein interactions using Cytoscape.

The visualization results show that there are 8 chemical compounds contained in the grape and 13 compounds in the lime which form a network with 29 target proteins involved in Parkinson's pathophysiology. There are 17 target proteins that are predicted to be working targets from the chemical compounds contained in grape and lime which interact with target proteins according to the KEGG pathway for Parkinson's.

Keywords: parkinson's disease, grape, lime, network pharmacology, Cytoscape