

ABSTRAK

YEDIYA OLVINA UNIQUE, 2023, *NETWORK PHARMACOLOGY* PALA (*Myristica fragrans*) DAN PETERSELI (*Petroselinum sativum* Hoffm.) SEBAGAI ANTIDEPRESAN, 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.

Depresi merupakan gangguan kesehatan mental yang kompleks dan disebabkan beberapa faktor penyebab baik genetik maupun non-genetik. Pala dan peterseli memiliki banyak metabolit sekunder yang diduga memiliki efek farmakologi. Tanaman pala dan peterseli terbukti memiliki efek antidepresan pada uji praklinis secara *in vivo*. Tujuan penelitian ini yaitu memprediksi profil *network pharmacology* senyawa kimia pala dan peterseli terhadap protein target depresi.

Penelitian ini menggunakan metode *Network pharmacology*. *KNAPSAcK* untuk mengumpulkan data kandungan senyawa kimia. *PubChem* untuk mengetahui aktivitas senyawa. *DisGeNET* dan *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. Senyawa yang didapat diunduh dalam bentuk TSV dan CSV kemudian mentabulasikannya dalam bentuk *excel*. Perangkat lunak *Cytoscape* untuk memvisualisasikan profil *network pharmacology* pala dan peterseli terhadap protein target depresi sebagai antidepresan.

Visualisasi profil *network pharmacology* yang terbentuk didapatkan protein target depresi yang terlibat dengan senyawa pada tanaman pala dan peterseli yaitu CACNA1C, ALOX12, COMT, MAOB, DRD2, ESR2, GSK3B, DRD4, MAOA, EGFR, ESR1, PTGS2, dan NR1I2. Senyawa yang memiliki aktivitas dengan target tersebut sebanyak 47 senyawa. Sejumlah 89 senyawa diprediksi memiliki aktivitas atau berinteraksi dengan protein target tersebut. Senyawa dan protein target tersebut membentuk suatu profil *network pharmacology*. Profil *network pharmacology* yang terbentuk dari senyawa aktif pala dan peterseli pada protein target depresi dari *pathway serotonergic synapse*, *dopaminergic synapse*, dan *pathway* lain memberikan keterbaruan pengobatan depresi dengan multi komponen dan multi target.

Kata kunci : Depresi, *network pharmacology*, pala, peterseli

ABSTRACT

YEDIYA OLVINA UNIQUE, 2023, NETWORK PHARMACOLOGY OF NUTMEG (*Myristica fragrans*) AND PARSLEY (*Petroselinum sativum* Hoffm.) AS AN ANTIDEPRESSANT, THESIS, BACHELOR 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.

Depression is a complex mental health disorder caused by several factors, both genetic and non-genetic. Nutmeg and parsley have many secondary metabolites that are suspected to have pharmacological effects. Nutmeg and parsley are also proven to have antidepressant effects based on in vivo preclinical trials. The aim of this research was to predict the pharmacology profile of the chemical compounds from combination of nutmeg and parsley toward depression target proteins.

This research used the network pharmacology method. KNApSAcK collected data on the content of chemical compounds. PubChem to identified the activity of compounds. DisGeNET and KEGG Pathway identified target proteins. UniProt validated target proteins. String identified interactions between proteins. Stitch, SwissTargetPrediction, SEA, and SuperPred predicted chemical-protein target relationships. Compounds obtained were downloaded in TSV and CSV form and tabulated in *excel* form. Cytoscape software visualized network pharmacology profiles of nutmeg and parsley toward depression target proteins as antidepressants.

Visualization of the network pharmacology profile that was formed showed that depression target proteins were involved with compounds in nutmeg and parsley, there were CACNA1C, ALOX12, COMT, MAOB, DRD2, ESR2, GSK3B, DRD4, MAOA, EGFR, ESR1, PTGS2, and NR1I2. 47 compounds that had activity with this target. 89 compounds were predicted to have activity in the target protein. These compounds and proteins formed a network pharmacology profile. The network pharmacology profile formed from the active compounds of nutmeg and parsley on depression target proteins from the serotonergic synapse pathway, dopaminergic synapse and other pathways provides new multi-component and multi-target depression treatment.

Keyword : Depression, network pharmacology, nutmeg, parsley