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by Lilis Maghfuroh

Submission date: 13-Jun-2023 02:41PM (UTC+0800)
Submission ID: 2115066685
File name: Abstrak_proceeding.pdf (362.38K)
Word count: 300
Character count: 1852

Antiviral Effect of Lemongrass Extract (Cymbopogon *nardus*) by Inhibit Expression of TNFR-1 Protein via Bioinformatic Study

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Abstract

Citronella grass (*Cymbopogon nardus)* is a plant containing many metabolite compounds which prevent and treat various diseases, one of which is anti viral infection. Antioxidant compounds found in citronella have been shown to improve the immune system by increasing cytokines. Viral infection can increasing inflammation. The inflammation causing protein damage so that Tumor Necrosis Factor Receptor-1 (TNFR-1) is overexpressed. This current research aims to determine the potential of compounds present in the citronella plant stem as anti-inflamation through inhibition of TNFR-1 protein. The method was a bioinformatics approach, namely the in-silico method which provided a simulation of binding protein ligands to TNFR-1 as inhibitor mechanism. The results of this study indicated that there was a potential for citronella compounds, namely torreyol binding to TNFR-1. Torreyol compounds interact with TNFR-1 via the positions Leu127, Asn148, Thr135, Cys137, Asn134, and Gln133 with Van der Waals bonds, pi-alkyl bonds on Tyr103, and hydrogen bonds on Glu147 and Val136. From the results above, it can be concluded that the Torreyol compound is predicted to act as an inhibitor of TNFR-1 protein activity because it inhibits the binding site of the native ligand on TNFR-1. The stability of the binding interaction produced by Torreyol allows a response to TNFR-1 inhibitor activity. By inhibiting the activity of TNFR-1 inhibitors, it is possible to inhibit the anti inflammation when viral infection into the body.

Keywords

Cymbopogon nardus, viral infection, TNFR-1 protein, anti-inflammation, bioinformatics.

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