

STUDY OF ANTIANGIOGENIC MECHANISM OF SINGLE GARLIC EXTRACT (*Allium sativum* 'Solo garlic') IN VIVO AND IN SILICO

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ABSTRACT

Cancer is one of the leading causes of death in the world. One strategy to inhibit the development of cancer cells is to inhibit the process of angiogenesis. This study aimed to examine the antiangiogenic effects of ethanol extract, ethanol fraction, chloroform fraction and single garlic n-hexane fraction from Temanggung in vivo, to determine which fraction gave the best activity, and to observe its effect on the expression of vascular endothelial growth factor (VEGF), and , explores its mechanism of action based on an in silico study.

In vivo antiangiogenic effect was observed using a 9-day-old chick embryo chorioallantoic membrane (CAM) model induced with basic fibroblast growth factor (bFGF) as an angiogenesis inducator. The test will be carried out in 7 treatment groups. Group I as a paper disc control, group II as a control of bFGF, group III as a control of bFGF+dimethyl sulfoxide solvent (DMSO), groups IV, V, VI and VII as a test group with 3 (three) variations in sample concentration. After 3 days of incubation, the angiogenic response was observed using the parameter of observing the number of new blood vessels and observing the expression of VEGF in the chorioalantoic membrane blood vessels using the immunohistochemical method. The angiogenic mechanism was investigated in silico using the Protein Ligand ANT System (PLANTS) software and the ref-ligand preparation using YASARA. As ligands are bioactive compounds found in garlic with target protein molecules that play a role in angiogenesis, namely: bFGF, VEGF and COX-2. The output target of this research is to be able to publish at least 1 article in the journal "European Journal of Medicinal Chemistry" (indexed by Scopus Q1) .

The results showed that both the ethanol extract, ethanol fraction, chloroform fraction and n-hexane fraction had the ability to inhibit the angiogenesis process. The chloroform fraction has the best activity in inhibiting the angiogenesis process

Kata Kunci: *single garlic, antiangiogenic activity, bFGF, CAM, VEGF, immunohistochemistry, in silico*