

Cytotoxic Activity of Volatile Compounds in *Cymbopogon nardus* Essential Oils

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ABSTRACT

Abstract: Plants produce a variety of secondary metabolites, one of which is essential oils that contain a variety of volatile compounds and are useful for humans. *Cymbopogon nardus* contains volatile compounds that can inhibit the proliferation of cancer cells. This research aims to explore the antiproliferation activity of *C. nardus*' essential oils with different concentrations against breast cancer Michigan Cancer Foundation-7 (MCF-7) cells. Antiproliferation test was carried out with total cells method using trypan blue and cells were calculated using a microscope. Gas Chromatography-Mass Spectrometer (GC-MS) was performed to identify the volatile compounds. The results showed that the Inhibitory Concentration 50 (IC₅₀) value was 359.6 ppm with an inhibition percent of 44.49% at 170 ppm. Meanwhile, inhibition percent against Vero normal cell was 29.04%, compared to Doxorubicin 35.23%. The dominant volatile compound in *C. nardus*' essential oil were Geraniol and Citronellol.

Abstrak Tanaman menghasilkan berbagai macam metabolit sekunder, salah satunya dalam bentuk minyak atsiri yang mengandung berbagai macam senyawa volatil yang berguna bagi manusia. *Cymbopogon nardus* mengandung senyawa volatil yang dapat menghambat proliferasi sel kanker. Penelitian ini bertujuan untuk mengetahui aktifitas antiproliferasi minyak atsiri *C. nardus* dengan beberapa konsentrasi terhadap sel kanker payudara Michigan State Foundation-7 (MCF-7). Uji antiproliferasi dilakukan dengan metode total sel menggunakan trypan blue dan sel dihitung menggunakan mikroskop. Gas Chromatography-Mass Spectrometer (GC-MS) dilakukan untuk mengidentifikasi senyawa volatil. Hasil menunjukkan bahwa konsentrasi penghambatan 50 (IC₅₀) sebesar 359.6 ppm dengan persen penghambatan sebesar 44.49% pada konsentrasi 170 ppm. Sementara itu, persen inhibisi terhadap sel normal Vero sebesar 29.04%, dibandingkan dengan Doksorubisin yang sebesar 35.23%. Senyawa volatil dominan yang terdapat pada *C. nardus* adalah Geraniol dan Citronellol.



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