

Uji toksisitas ekstrak buah (*Garcinia picrorrhiza* MIQ) mentah sedang dan matang dalam pelarut polar semi polar dan nonpolar dengan brine shrimp lethality test bslt = Toxicity test of raw half ripe and ripe fruits extracts of *Garcinia picrorrhiza* miq in polar semipolar and nonpolar solvents with brine shrimp lethality test bslt

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Abstrak

Sesoot (*G. picrorrhiza* Miq.) merupakan sumber daya hayati yang memiliki potensi sitotoksik terhadap sel kanker payudara. Potensi ini memberikan peluang untuk penatalaksanaan kanker payudara melalui permodelan doxorubisin dan kombinasinya dengan sampel herbal. Penelitian ini untuk membuktikan potensi antikanker payudara terhadap sel MCF-7 dan T47D dari daging buah dan kulit buah sesoot (*G. picrorrhiza* Miq.) yang selanjutnya disebut buah. Telah dilakukan karakterisasi sampel secara kimia dan biomolekuler sehingga menghasilkan sampel terkarakterisasi, GpKar. Sitotoksitasnya ditentukan dengan metode MTT (3-[4,5-dimethylthiazol-2-yl]-2,5 diphenyl tetrazolium bromide) Assay, lalu dilakukan uji kombinasi dengan doxorubisin untuk mendapatkan Combination Index (CI). Pengamatan induksi apoptosis dilakukan dengan metode Double Staining dan ekspresi protein Caspase 3 dengan metode Enzyme-linked Immunosorbent Assay (ELISA). GpKar memiliki LC50 terhadap larva *Artemia salina* Leach sebesar 21,110 μg/mL (paling kecil di antara 15 sampel lainnya). Pada uji terhadap sel Vero dengan konsentrasi 250 μg/mL hanya mematikan 11,844 %, tetapi mematikan sel T47D 50,825 % dan MCF-7 31,743 %. Kombinasinya dengan doxorubisin menghasilkan efek sinergis dalam mematikan sel MCF-7 pada konsentrasi 0,200 μg/mL doxorubisin dan konsentrasi GpKar maksimal 125,238 μg/mL (1/4 IC50) juga terhadap sel T47D pada konsentrasi 0,200 μg/mL doxorubisin dan konsentrasi GpKar maksimal 61,799 μg/mL (1/4 IC50). GpKar mempengaruhi induksi apoptosis pada konsentrasi 500,951 μg/mL (1 IC50) dengan menghasilkan persentase kematian sel MCF-7 paling tinggi yaitu 99 % dan terhadap Sel T47D sebesar 91 %, pada konsentrasi 61,799 μg/mL (1/4 IC50) sedangkan terhadap sel Vero dapat menghasilkan persentase kematian paling rendah yaitu 2,100 % pada konsentrasi 132,943 μg/mL (1/4 IC50). Kombinasinya dengan doxorubisin menghasilkan persentase kematian yang lebih rendah akibat induksi apoptosis. GpKar dan kombinasinya dengan doxorubisin mampu meningkatkan konsentrasi protein Caspase 3.

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Sesoot (*G. picrorrhiza* Miq.) is a medicinal plant which has cytotoxic activity against breast cancer cells. This potency provides the opportunity for treatment of breast cancer through doxorubicin modelling and its combination with herb. This study was done to prove the anti-breast cancer potency of the fruit and the hull of sesoot (*G. picrorrhiza* Miq.) hereinafter referred to as the fruit against MCF-7 cell and T47D cell. Chemical and Biomolecular Characterizations were done to obtain the characterized sample of GpKar. The cytotoxicity effect was determined using the method of MTT (3-[4,5-dimethylthiazol-2-yl]-2,5 diphenyl tetrazolium bromide) Assay, and the combination test with doxorubicin resulting the Combination Index (CI). The apoptotic induction was observed using Double Staining Method and the Caspase 3 protein expression was observed using the method of Enzyme-Linked Immunosorbent Assay (ELISA). The LC50 of

GpKar against the larvae of the *Artemia salina* Leach was 21.110 $\mu\text{g/mL}$ (the least among 15 samples). The GpKar concentration of 250 $\mu\text{g/mL}$ was the least toxic in term of mortality against Vero cell (11.844 %), but toxic in term of mortality against T47D cell (50.825 %) and MCF-7 cell (31.743 %). The combination with doxorubicin resulted in the synergistic effect against MCF-7 cell (0.200 $\mu\text{g/mL}$ doxorubicin with the maximum GpKar concentration of 125.238 $\mu\text{g/mL}$ (1/4 IC₅₀)) and also against T47D cell (0.200 $\mu\text{g/mL}$ doxorubicin with the maximum GpKar concentration of 61.799 $\mu\text{g/mL}$ (1/4 IC₅₀)). GpKar induced the apoptosis at the concentration of 500.951 $\mu\text{g/mL}$ (1 IC₅₀) resulting the mortality percentage of the MCF-7 cell up to 99 % and up to 91 % against T47D cell at the concentration of 61.799 $\mu\text{g/mL}$ (1/4 IC₅₀) of GpKar, whereas the concentration of 132.943 $\mu\text{g/mL}$ (1/4 IC₅₀) of GpKar resulted in the lowest mortality percentage against Vero cell which was 2.100 %. The combination of GpKar with doxorubicin resulted in the lower mortality percentage as the consequence of apoptotic induction. GpKar and its combination with doxorubicin increased the concentration of the Caspase 3 protein.