

INTISARI

PENGARUH SENYAWA TURUNAN ISOFLAVON 1,2-EPOKSI-3[3-(3'4'-DIMETOKSIFENIL)-4H-1-BENZOPIRAN-4-ON] PROPANA (EPI) TERHADAP EKSPRESI CYCLIN D SEL KANKER PAYUDARA TIKUS SPRAGUE DAWLEY YANG DIINDUKSI SENYAWA 7,12-DIMETHYLBENZ(A)ANTHRACENE (DMBA)

Latar Belakang: Indonesia memiliki keanekaragaman hayati yang dapat dimanfaatkan dan dikembangkan. Bahan alam yang dapat dikembangkan menjadi senyawa antikanker adalah senyawa isoflavon yang merupakan kelompok flavonoid. Salah satu senyawa turunan isoflavon adalah 1,2-Epoksi-3[3-(3'4'-dimetoksifenil)-4H-1-benzopiran-4-on] propana (EPI). Senyawa ini merupakan hasil ekstraksi minyak cengkeh (eugenol) dan diduga memiliki efek antikanker.

Tujuan Penelitian: Mengetahui pengaruh pemberian 1,2-Epoksi-3[3-(3'4'-dimetoksifenil)-4H-1-benzopiran-4-on] propana (EPI) terhadap ekspresi cyclin D pada model kanker payudara tikus *Sprague dawley* yang diinduksi senyawa 7,12-Dimethylbenz(a)Anthracene(DMBA).

Metode Penelitian: Penelitian ini dilakukan dengan menggunakan *randomized post-test only control group design*. Subyek penelitian menggunakan tikus *Sprague dawley* yang diinduksi dengan senyawa DMBA sebagai model kanker payudara. Sebelumnya, tikus *Sprague dawley* diberi senyawa turunan isoflavon 1,2-Epoksi-3[3-(3'4'-dimetoksifenil)-4H-1-benzopiran-4-on] propana (EPI). Hasil penelitian didapatkan dengan menghitung rata-rata persentase sel yang mengekspresikan cyclin D yang telah diwarnai dengan metode pewarnaan imunohistokimia. Data diolah menggunakan Uji Statistika Kruskal Wallis dilanjutkan Uji Mann Whitney.

Hasil Penelitian: Pemberian senyawa EPI dosis 1 mg/kg BB, 2 mg/kg BB, dan 4 mg/kg BB menghambat ekspresi cyclin D dibandingkan dengan DMBA, $p=0,029$, $p=0,029$, $p=0,029$ ($p<0,05$). Pemberian senyawa EPI dosis 1 mg/kg BB dan 4 mg/kg BB tidak menunjukkan perbedaan dibandingkan dengan doksorubisin, $p=0,486$, $p=0,686$ ($p>0,05$) dan senyawa EPI dosis 2 mg/kg BB menunjukkan adanya perbedaan dibandingkan dengan pemberian doksorubisin $p=0,029$ ($p<0,05$). Pemberian senyawa EPI 4 mg/kg BB secara efektif dapat menghambat ekspresi cyclin D berdasarkan hasil rata-rata persentase yang hampir sama dengan hasil rata-rata persentase kelompok kontrol.

Kesimpulan: Pemberian senyawa turunan isoflavon 1,2-Epoksi-3[3-(3'4'-dimetoksifenil)-4H-1-benzopiran-4-on] propana (EPI) mampu menghambat ekspresi cyclin D sel kanker payudara tikus *Sprague dawley* yang diinduksi senyawa 7,12-Dimethylbenz(a)Anthracene (DMBA).

Kata Kunci: Isoflavon, EPI, Cyclin D, DMBA, Kanker Payudara

ABSTRACT

THE EFFECT OF ISOFLAVONES DERIVATE 1,2-EPOXY-3[3-(3'4'-DIMETHOXYPHENYL)-4H-1-BENZOPYRAN-4-ON] PROPANE (EPI) ON THE EXPRESSION OF CYCLIN D IN BREAST CANCER MODEL OF SPRAGUE DAWLEY RATS INDUCED BY 7,12-DIMETHYLBENZ (A)ANTHRACENE (DMBA)

Background: Indonesia has a biodiversity that can be used and developed. Natural substance that can be used as an anticancer is isoflavones which are a group of flavonoids. One of the isoflavone derivatives are 1,2-epoxy-3[3-(3'4'-dimethoxyphenyl)-4H-1-benzopyran-4-on] propane (EPI). This compound is the result of oil cloves (eugenol) extraction and is thought to have anticancer effect.

Objective: To investigate the effect of 1,2-epoxy-3[3-(3'4'-dimethoxyphenyl)-4H-1-benzopyran-4-on] propane (EPI) on the expression of cyclin D in breast cancer model of *Sprague dawley* rats induced by 7,12-Dimethylbenz(a)Anthracene (DMBA).

Methods: This study was conducted using a randomized post-test only control group design. The subjects of the study using *Sprague dawley* rats were induced with DMBA compound as a model of breast cancer. Previously, *Sprague dawley* rats were given isoflavone derivative 1,2-epoxy-3[3-(3'4'-dimethoxyphenyl)-4H-1-benzopyran-4-on] propane (EPI). The result was obtained by calculating the average percentage of cells expressing cyclin D which had been stained by immunohistochemistry method. The data were processed statistically using Kruskal Wallis Test followed Mann Whitney Test.

Results: An EPI dose of 1 mg / kg BW, 2 mg / kg BW, and 4 mg / kg BW inhibited expression of cyclin D compared to DMBA, $p=0.029$, $p=0.029$, $p=0.029$ ($p < 0.05$). An EPI dose of 1 mg / kg BW and 4 mg / kg BW showed no difference compared to doxorubicin, $p=0.486$, $p=0.686$ ($p > 0.05$) and an EPI dose of 2 mg / kg BW showed a difference compared to the administration of doxorubicin, $p=0.029$ ($p < 0.05$). Administration EPI 4 mg /kg BW can effectively inhibit the expression of cyclin D based on the average percentage which is almost equal to the average percentage of the control group.

Conclusion: The administration of isoflavone derivative 1,2-epoxy-3[3-(3'4'-dimethoxyphenyl)-4H-1-benzopyran-4-on] propane (EPI) was capable of inhibiting the expression of cyclin D breast cancer model of *Sprague dawley* rats induced by 7,12-Dimethylbenz(a)Anthracene (DMBA).

Keywords: Isoflavones, EPI, Cyclin D, DMBA, Breast Cancer