

Daya hambat karoten dalam ekstrak minyak kelapa sawit terhadap proliferasi serta pertumbuhan in vitro dan in vivo sel tumor kelenjar susu mencit C3H = The inhibition power Of β -Carotene in palm oil extract on the proliferation and in vitro and in vivo growth of C3H mouse mammary tumor cells

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Abstrak

Ruang Lingkup dan Cara Penelitian:

Di Indonesia angka kematian karena kanker terus meningkat dari 1,45 dalam tahun 1972 menjadi 4,4% dalam tahun 1992. Dari studi prospektif dan retrospektif diketahui bahwa karotenoid mengurangi risiko mendapatkan kanker payudara, (β -karoten adalah salah satu karotenoid yang dikandung oleh minyak kelapa sawit (600.000 $\mu\text{g}/\text{Kg}$). Karena cara pengobatan pembedahan, radioterapi dan kemoterapi cukup mahal dan acapkali tidak terjangkau oleh sebagian golongan masyarakat, maka perlu dicari cara lain, di antaranya memanfaatkan β -karoten yang ada dalam minyak kelapa sawit, namun perlu diteliti dosis ekstrak minyak kelapa sawit (EMKS) yang tepat.

Penelitian ini dilakukan untuk mengetahui pengaruh pemberian EMKS yang mengandung β -karoten sebanyak 0,02 $\mu\text{g}/\text{ml}$, 0,1 $\mu\text{g}/\text{ml}$ dan 0,5 $\mu\text{g}/\text{ml}$ terhadap pertumbuhan in vitro sel tumor kelenjar susu mencit C3H. Digunakan 5 kelompok masing-masing 6 ulangan yang terdiri atas 3 kelompok uji dan 2 kelompok kelola (kelola bebas dan kelola pelarut). Selain itu dilakukan pula penelitian secara in vivo dengan dosis 1000 $\mu\text{g}/0,1\text{ ml}$ dan 2000 $\mu\text{g}/0,1\text{ ml}$ per hari selama 21 hari dengan menggunakan 24 ekor mencit yang dibagi dalam 2 kelompok kelola dan 2 kelompok uji.

Hasil dan Kesimpulan:

Dengan melakukan analisis varian pada hasil penelitian diketahui tidak ada perbedaan yang bermakna antara kelompok kelola dan kelompok uji dosis 0,02 $\mu\text{g}/\text{ml}$. Kemaknaan terjadi pada dosis 0,1 $\mu\text{g}/\text{ml}$ dan 0,5 $\mu\text{g}/\text{ml}$. Ditemukan bahwa makin besar dosis yang diberikan makin kecil rasio pertumbuhan biakan sel tumor. Selain itu analisis varian indeks label (IL) BUdR menunjukkan bahwa makin besar dosis EMKS yang diberikan, makin rendah nilai Ilnya. Sedangkan penelitian in vivo dengan dosis 1000 $\mu\text{g}/0,1\text{ ml}$ dan 2000 $\mu\text{g}/0,1\text{ ml}$ tidak memperlihatkan pengaruh EMKS terhadap volume dan berat tumor kelenjar susu mencit C3H.

Berdasarkan hal tersebut di atas dapat ditarik kesimpulan bahwa pemberian EMKS dapat menghambat pertumbuhan sel tumor kelenjar susu mencit C3H secara in vitro pada dosis 0,1 $\mu\text{g}/\text{ml}$ dan 0,5 $\mu\text{g}/\text{ml}$.

Sedangkan secara in vivo dengan dosis 1000 $\mu\text{g}/0,1\text{ ml}$ dan 2000 $\mu\text{g}/0,1\text{ ml}$ pertumbuhan sel tumor kelenjar susu mencit belum dihambat.

<i>Scope and methods of study:

The mortality of cancer in Indonesia had been increasing from 1.4% in 1972 to 4.4% in 1992. Through prospective and retrospective studies it was known that carotenoid could lessen the risk for getting breast cancer. β -carotene was one of the carotenoids contained in palm oil (600.000 $\mu\text{g}/\text{Kg}$). Because the treatment of breast cancer by surgery, radiotherapy and chemotherapy was rather expensive and often not within reach

by part of the people, so other way of treatment should be sought, among others by using β -carotene in palm oil of which the precise dose should be first determined.

This investigation was done to know the effect of putting palm oil extract (POE) containing respectively 0.02 $\mu\text{g}/0,1\text{ml}$; 0.1 $\mu\text{g}/0,1\text{ml}$ and 0.5 $\mu\text{g}/0,1\text{ml}$ on the in vitro growth of C3H mouse mammary tumor cells. Five groups of each six repetitions consisting of three treated and two control groups. Besides an in vivo investigation was done with doses of 1000 $\mu\text{g}/0,1\text{ ml}$ and 2000 $\mu\text{g}/0,1\text{ ml}$ per day respectively for 21 days, by using 24 mice which was divided into two control and two treatment groups.

Result and conclusion:

By using variance analysis it was found that there was no significant difference between the control groups and the 0.02 $\mu\text{g}/0,1\text{ ml}$ treated group; significant difference occurred at groups of 0.1 $\mu\text{g}/0,1\text{ ml}$ and 0.5 $\mu\text{g}/0,1\text{ ml}$ doses. It was found that the bigger the dose given the smaller ratio of tumor cell growth. Beside this it was known also from the variance analysis of the BUdR labeling index that putting palm oil extract on the tumor cell culture lessen the value of the labeling index conform with the dose given.

Whereas the in vivo investigation of β -carotene contained in POE given in doses of 1000 $\mu\text{g}/0,1\text{ ml}$ and 2000 $\mu\text{g}/0,1\text{ ml}$ showed no significant difference on the tumor volume and tumor weights between the control and treatment groups.

Based on the above investigation was concluded that treatment with POE containing β -carotene in doses of 0.1 $\mu\text{g}/0,1\text{ ml}$ and 0.5 $\mu\text{g}/0,1\text{ ml}$ could inhibit the in vitro growth of C3H mouse mammary tumor cells. While with doses of 1000 $\mu\text{g}/0,1\text{ ml}$ and 2000 $\mu\text{g}/0,1\text{ ml}$ the in vivo growth of mouse mammary tumor cells had not inhibited yet.