Efek pemberian minyak buah merah (pandanus conoideus lam.) terhadap pertumbuhan in vivo tumor kelenjar susu mencit c3h: tinjauan khusus aktivitas proliferasi dan apoptosis = In vivo effects of red papua oil (pandanus conoideus lam) on tumor growth in mammary gland tumor of c3h strain mouse: proliferation and apoptosis activity

Hening Pujasari, author

Abstrak

Latar belakang: Buah Merah (Pandanus conoideus Lam.) merupakan salah satu kekayaan biodiversitas alam Indonesia khas Papua yang sejak lama dikonsumsi sebagai makanan dan dikenal memiliki khasiat obat antara lain terhadap penyakit keganasan. Namun disisi lain, dasar ilmiah cara pengobatan tersebut belum diketahui secara pasti sehingga perlu dilakukan penelitian bagi pembenaran ilmiah pemakaian tanaman obat tersebut. Minyak Buah Merah diketahui mengandung beta karoten dan tokoferol yang tinggi. Berbagai penelitian menunjukkan tokoferol dapat menghambat pertumbuhan kanker payudara manusia pada kultur melalui induksi berhentinya sintesis DNA, diferensiasi sal, dan apoptosis. Karotenoid menurunkan pertumbuhan tumor payudara, meningkatkan ekspresi gen proapoptosis p53 dan BAX, menurunkan ekspresi gen antiapoptosis Bcl-2, dan meningkatkan rasio BAX:Bcl-2 pada tumor. Gen .repressor p53 dapat menginduksi cell cycle arrest sehingga memungkinkan terjadinya perbaikan DNA dan apoptosis.

Tujuan: mengetahui pengaruh pemberian MBM per oral sebanyak 0,5ml, Iml, dan 2ml terhadap aktivitas apoptosis dan pertumbuhan tumor kelenjar susu mencit C3H.

Rancangan penelitian: merupakan penelitian in vivo, digunakan 4 kelompok, 3 kelompok uji dan 1 kelompok kontrol, masing-masing 10 ulangan. Aktivitas apoptosis dilihat melalui indeks apoptosis menggunakan uji TUNEL. Perturnbuhan tumor dinilai dengan melihat aktivitas proliferasi menggunakan pulasan histokimia AgNOR. Selanjutnya dicari kemaknaan antara indeks apoptosis dan nilai AgNOR dart kelompok kontrol dan kelompok uji.

Hasil dan Kesimpulan: Analisis varian menunjukkan tidak ada perbedaan bermakna antara indeks volume, berat, dan indeks apoptosis kelompok kontrol dan kelompok uji ($p>0.05$) walaupun ada kecnderungan adanya peningkatan aktivitas apoptosis pada mencit yang medapatkan MBM. Sebaliknya terdapat perbedaan yang bermakna ($p<0,05$) antara nilai AgNOR kelompok kontrol dan kelompok uji. Dan hasil uji multiple comparison untuk menetapkan dosis optimal dart ketiga dosis (0,5m1, 1 ml, 2m1), didapatkan bahwa dosis 2m1 terbukti bermakna secara statistik menurunkan proliferasi. Dengan demikian pada penelitian ini dapat disimpulkan adanya efek penekanan aktivitas proliferasi pada mencit yang mendppatkan MBM per oral dengan dosis optimal 2m1.

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Background: Red Papua (RP) is one of the Indonesian natural properties. Originally, RP comes from Papua province. It is consumed by Papua people as daily food since a long time ago. RP is considered to be cancer medicine, particularly for breast cancer treatment. Alternatively, the justification on the use of RP as an anti

cancer has not been established yet. Hence, scientific evidence on anticancer effect of RP is necessary. The previous study suggests that Red Papua Oil (RPO) contains a huge amount of carotene and of tocopherol. Some studies indicate that tocopherol can inhibit the growth of human breast cancer cell culture by prohibiting of DNA synthesis, induction of cell differentiation and apoptosis. Carotene reduces the rate of growth of breast tumor, improves gene expression of pro-apoptosis and p53 of BAX, degrades gene expression of anti-apoptosis Bcl-2, and increases the ratio of BAX: BCL-2. P53 gene can induce arrest cycle cell so that it enables cells to repair the DNA and generate apoptosis.

Aims: to identify the influence of RPO intake of 0,5m1, 1m1, and 2ml doses per oral on apoptosis and its effect on tumor growth in mammary gland tumor of C3H strain mouse.

Method: Twenty-four mice were randomly divided into four groups, three groups of RPO-treated groups and one control group. After tumor was transplanted, the three doses of RPO were given to the three groups. By twenty-eight day treatment, apoptosis and proliferation activities were measured_ TUNEL essay was used to detect apoptotic activity_ The tumor growth, which was determined by proliferation activity, was assessed by a histochemical technique, AgNOR (silver-staining nucleolar organizer regions). Statistical significance of Apoptosis Index (AI) and AgNOR value in control and groups treated with varied doses of RPO were calculated

Results and Conclusion: Variant analysis indicated that there was no significant difference of volume, weight and AI among control group and treated groups ($p>0.05$). However, there was a tendency to an increased apoptotic activity on the treated groups. On the contrary, AgNOR values were significantly different ($p<O, 05$) among groups. Subsequently, a multiple comparison analysis was done to determine the optimal dose from the three doses (0,5ml, l ml, and 2m1). Dose 2m1 was the most effective dose that was statistically significant in degrading proliferation. Thereby, it could be concluded that there was an inhibition of proliferation activity found on RPO-treated mice. Dose 2m1 was the optimal dose to reduce proliferation activity.