

Efek ekstrak metanol daun sirsak (*annona muricata linn*) terhadap pertumbuhan kanker payudara mencit c3h = The effect of methanol extracts of soursop *annona muricata linn* leaf on breast cancer growth in c3h mice

Pujiasih, author

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Abstrak

Kanker payudara adalah penyakit multifaktor yang mengakibatkan insiden kematian wanita tertinggi di dunia. Pengobatan kanker payudara berupa pembedahan, radioterapi, dan kemoterapi memiliki efek samping sehingga perlu pengobatan alternatif, salah satunya menggunakan bahan herbal. Daun sirsak (*Annona muricata* Linn) dilaporkan memiliki efek antitumor dan sitotoksik, tetapi penelitian *in vivo* terhadap kanker payudara masih sedikit, dibutuhkan penelitian lanjut mengenai efektivitas dan jalur penghambatan daun sirsak terhadap berbagai kanker.

Penelitian ini bertujuan untuk mengetahui daya hambat dan dosis efektif ekstrak metanol daun sirsak (*Annona muricata* Linn) terhadap pertumbuhan tumor payudara mencit C3H secara *in vivo*. Sebanyak 30 ekor mencit galur C3H yang ditransplan dengan tumor payudara dari mencit C3H donor bertumor, dibagi dalam 5 kelompok perlakuan, yaitu kontrol negatif hanya diberi pelarut CMC 0,5%, kontrol positif diberi doksorubisin, kelompok pemberian ekstrak daun sirsak dosis 15, 30, dan 45 mg/kg BB. Setiap mencit dicekok ekstrak daun sirsak 0,2 cc per hari selama 21 hari, sedangkan kelompok kontrol positif diberikan doksorubisin secara *intra vena* 0,03 g/20g BB seminggu sekali selama 21 hari. Panjang dan lebar tumor diukur di awal dan seminggu sekali selama perlakuan untuk mendapatkan data volume tumor. Pada akhir penelitian mencit dinekropsi, tumor mencit ditimbang dan dilakukan pewarnaan AgNOR untuk diukur aktivitas proliferasi sel.

Hasil uji Anova menunjukkan perbedaan yang bermakna ($p=0,007$) antar perlakuan terhadap volume tumor akhir dan terhadap aktivitas proliferasi ($p=0,001$). Uji Kruskal Wallis terhadap berat tumor menunjukkan tidak ada perbedaan yang bermakna antar perlakuan ($p=0,03$). Hasil uji korelasi Spearman secara bermakna ($p=0,03$) menunjukkan ada korelasi positif antara aktivitas proliferasi sel dengan pertumbuhan volume tumor dengan kekuatan korelasi yang lemah ($r=0,39$). Disimpulkan bahwa ekstrak metanol daun sirsak (*Annona muricata* Linn) dapat menghambat laju pertumbuhan volume tumor dan aktivitas proliferasi sel kanker payudara mencit C3H dan optimum penghambatan pada dosis 30 mg/kg BB.

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Breast cancer is a multifactor disease that has been a leading cause of woman's mortality. Treatments for breast cancer such as surgery, radiotherapy, and chemotherapy have their own side effects, so that alternative treatments such as herbal medicine are needed. Soursop leaf (*Annona muricata* Linn) has been reported to have antitumor and cytotoxic effects, but only few conducted *in vivo*, an advanced research is needed to find the effectiveness and the inhibition pathway of the soursop leaf.

The purpose of this research is to find out the inhibition capacity and the effective dose of soursop leaf methanol extract (*Annona muricata* Linn) against the development of C3H mice's breast cancer *in vivo*. There were thirty mice of C3H strain which were transplanted with breast tumor and they were divided into five groups consisting of negative control group which was given only solvent CMC 0.5%, a positive

control group which was given doxorubicin, a dose group of 15 mg/kg BB, a dose group of 30 mg/kg BB, and a dose group of 45 mg/kg BB. Each mouse was given 0,2 cc soursop leaf extract every day for 21 days while the positive control group was given doxorubicin 0,03 g/20 gram BB once a week for 21 days intravenously. The length and the width of the tumor were measured at the beginning and also measured once a week during the experiment process to gain the data of the tumor volume. At the end of the research, the tumor of the mice was lifted and weighed and it was stained by AgNOR to measure the proliferation activity of the cell.

The Anova result showed that there was a significant difference ($p=0,007$) between treatment against the development of tumor which was marked by the decrease of the tumor volume and proliferation activity ($p=0,001$). The Kruskal Wallis result showed that there was no significant difference ($p<0,33$) in the tumor weight. Spearman correlation study significantly ($p=0,03$) indicated that there was a positive correlation between the cell proliferation activity and the growth of the tumor but in a weak correlation ($r=0,39$).

Therefore, it could be concluded that the methanol extract of soursop leaf (*Annona muricata* Linn) can inhibit the growth rate of tumor volume as well as the proliferation activity of the breast cancer cell of C3H mice and it worked optimally at 30 mg/kg BB dose.