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Judul                    **Studi ekstrak etanol Daun Benalu Mangga  
(*Dendrophthoe petandra*) untuk meningkatkan  
Treg CD4<sup>+</sup>CD25<sup>+</sup> sebagai pencegahan dini kanker  
usus besar**

**Tahun ke 1 dari rencana 2 tahun**

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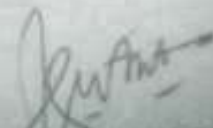
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## **Studi ekstrak etanol Daun Benalu Mangga (*Dendrophthode petandra*) untuk meningkatkan sel TregCD4<sup>+</sup>CD25<sup>+</sup> sebagai pencegahan dini kanker usus besar**

### **ABSTRAK**

*Limfosit T memegang peranan penting dalam mengurangi derajat keparahan suatu penyakit. Ekstrak daun benalu mangga (*Dendrophthode petandra*) diduga mempunyai potensi immunoregulator. Penelitian Tahun ke 1 bertujuan untuk mengetahui pengaruh pemberian ekstrak etanol daun benalu mangga terhadap respon imun seluler pada mencit yang dibuat model kanker usus besar. Setelah minggu ke-20 mencit dibedah, usus besar diambil dan dibuat Parameter yang diukur adalah persentase sel T limfosit yang mengekspresikan CD4<sup>+</sup> Foxp3<sup>+</sup> pada mesentrik lymphnode, dan ekspresi COX2 pada sediaan imunohistokimia dari usus besar serta ekspresi gen TGF- $\beta$ . Penelitian ini adalah True Experimental-posttest control group design, yang terdiri dari kelompok I sebagai kontrol (pemberian 5%DSS+AOM), Kel II (pemberian 5%DSS+AOM+ ekstrak 10 mg/KgBB), kelompok III (pemberian 5%DSS+AOM+ ekstrak 20mg/KgBB), kelompok IV (pemberian 5%DSS+AOM+ekstrak 40mg/Kg BB), serta kelompok V sebagai kontrol negatif. Uji One Way Anova menunjukkan adanya peningkatan persentase sel Treg CD4<sup>+</sup>Foxp3<sup>+</sup> yang signifikan pada kelompok IV ( $p < 0,05$ ) yang diimbangi dengan peningkatan ekspresi TGF- $\beta$ , serta menurunkan ekspresi COX2 pada kanker usus. Kesimpulan dari penelitian ini, pemberian ekstrak 40mg/KgBB efektif dapat menurunkan inflamasi yang ditandai dengan peningkatan ekspresi TGF- $\beta$  dan penurunan COX2 pada usus besar. Hasil penelitian ini diharapkan menjadi terapi penyakit kanker usus besar di Indonesia.*

*Keyword: sel limfosit T CD4<sup>+</sup>CD25<sup>+</sup>, benalu mangga, kanker, usus besar*

Study of ethanol extract of leaves Parasitic Plant of Mango  
(*Dendrophthode petandra*) to improve TregCD4 + CD25 + cells  
as early colon cancer prevention

**ABSTRACT**

T lymphocytes play an important role in reducing the severity of an illness. Parasite mango leaf extract (*Dendrophthode petandra*) suspected of having the potential immunoregulator. Year 1 research aims to determine the effect of ethanol extract of the leaves of mango parasite cellular immune response in mice made models of colon cancer. After week 20, mice were dissected, colon taken and made parameters measured were the percentage of T cells that excrete lymphocyte CD4 + Foxp3 + on mesentric lymphnode, and immune histochemical expression of COX2 in the preparation of the colon as well as gene expression of TGF -  $\beta$ . This study is True Experimental - posttest control group, which consisted of group I as control (giving 5 % DSS + AOM), group II (giving 5 % DSS + AOM + Extract 10 mg / kg), group III (giving 5 % DSS + + extract 20mg/KgBW AOM), group IV (giving 5 % DSS + AOM + extract 40 mg/kgBW), and group V as a negative control. One Way Anova test showed an increase in the percentage of CD4 + Treg cell Foxp3 + significant in the IV group ( $p < 0.05$ ) were offset by increased expression of TGF -  $\beta$ , and decreased the expression of COX2 in colon cancer. The conclusion of this study, 40mg/KgBW extract can effectively reduce the inflammation that is characterized by increased expression of TGF -  $\beta$  and decreased COX2 in the colon.. The results of this study are expected to be the therapy of colon cancer in Indonesian.

*Keyword: Treg CD4 + Foxp3 +, Dendrophthode petandra, cancer, colon*

## RINGKASAN

Patogenesis kanker usus besar sangat kompleks dan multifaktorial, tapi diyakini disebabkan oleh hasil interaksi antara lingkungan, genetik, mikroba dan faktor imunitas. Banyak cara untuk meningkatkan sistem kekebalan tubuh, salah satunya melalui suplemen obat yang berfungsi sebagai imunomodulator (meningkatkan sistem imun tubuh). Imunostimulator membantu tubuh untuk mengoptimalkan fungsi sistem imun yang merupakan sistem utama yang berperan dalam pertahanan. Salah satu herbal yang diduga mempunyai aktivitas sebagai imunomodulator adalah daun benalu mangga (*Dendrophthoe petandra*).

Penelitian Tahun ke 1 bertujuan untuk mengetahui pengaruh pemberian ekstrak etanol daun benalu mangga (*Dendrophthode petandra*) terhadap respon imun seluler pada mencit yang dibuat model kanker usus besar secara akut. Pada minggu ke-20 usus besar diambil dan dibuat sediaan imunohistokimia untuk mengetahui ekspresi COX2 dan ekspresi sel T limfosit yang mengekspresikan CD4+FoxP3+ pada mesentrik lymphnode diukur dengan menggunakan tehnik flowcytometry,

Penelitian ini dilakukan sebagai studi untuk mengetahui pengaruh pemberian ekstrak etanol daun benalu mangga untuk meningkatkan jumlah CD4+FoxP3. Penelitian ini akan dilaksanakan secara eksperimental laboratoris. Dengan posttest control group design. Mencit Balb/C dibagi dalam 6 kelompok. Kel I (kontrol negatif), Kel.II (pemberian 5%DSS+AOM), Kel.III (pemberian 5%DSS+AOM+ ekstrak dosis I), kel IV (pemberian 5%DSS+AOM+ekstrak dosis 2), kel V (pemberian 5%DSS+AOM+ekstrak dosis 3). Penelitian Tahun ke 1 bertujuan untuk mengetahui pengaruh pemberian ekstrak etanol daun benalu mangga terhadap respon imun seluler pada mencit yang dibuat model Colitis Associated Colon Cancer. Pada minggu ke-20 mencit dikorbankan, usus besar diambil untuk isolasi RNA (ekspresi gen TGF  $\beta$ ) dan dibuat preparat imunohistokimia untuk mengetahui ekspresi COX2. Parameter lain yang diukur adalah jumlah sel T limfosit yang mengekspresikan CD4<sup>+</sup>FoxP3<sup>+</sup> pada mesentrik lymphnode dengan menggunakan tehnik flowcytometry,

Hasil penelitian menunjukkan bahwa pemberian 5% DSS melalui air minum setelah injeksi single dosis AOM 10 mg/kgBB dapat menyebabkan kanker usus besar pada mencit BALB/c setelah perlakuan selama 20 minggu. Pemberian ekstrak Benalu Mangga (*Dendrophthoe pentandra*) 40mg/KgBB dapat mengurangi ekspresi COX2 pada kanker usus besar ( $p < 0.05$ ) serta ekspresi sitokin anti inflamasi TGF- $\beta$ , serta persentase sel T limfosit yang mengekspresikan CD4+FoxP3+ pada mesentrik lymphnode.

Hasil penelitian ini diharapkan menjadi pencegahan dini penyakit kanker usus besar di Indonesia.

## SUMMARY

Gastrointestinal cancer is always occupied the top five most common cancers.

The disease is usually characterized by indigestion. Diets greatly affect a person's health. Many emerging diseases caused by unhealthy eating patterns. One of the diseases caused by unhealthy diet is colon cancer.

Today, colon cancer has become one of the cancers which are prevalent in Indonesia, the data collected from 13 cancer centers showed that colon cancer is one of the five most common cancer found in men and women (Soeripto, 2003). This is due to lifestyle changes we are eating more fast foods that contain high fat and low in fiber. This is due to the demands of modern life that makes busyness as a routine, so the diet so it is not balanced. One of the risks due to the lack of fiber intake can cause colon cancer.

Pathogenesis of colon cancer is complex and multi-factor, but believed to be caused by the outcome of the interaction between environmental, genetic, microbial and immune factors. Many ways to boost the immune system, one through supplements serve as immunostimulatory drugs (increasing the body's immune system). Immunostimulatory helps the body to optimize the functioning of the immune system which is the main system that plays a role in defense.

One herb that supposed has the immunostimulant activity of leaves of mango parasites (*Dendrophthode petandra*). Parasite that attaches to particular plant has been used in traditional medicine. Active compounds in the parasite is believed to have anti cancer

activity are flavonoids, quercetin which are inhibitors of the enzyme DNA topoisomerase cancer cells. Quercetin is a flavanol molecules contained in parasitic leave of mango. This research was conducted as a study to determine the effect of ethanol extract of leaves of mango parasites (*Dendrophthode petandra*) to increase the number of CD4 +FoxP3+. The research will be carried out in an experimental laboratory. By post test control group design. Balb / C mice were divided into 5 groups, there are a control group (giving 5% DSS + AOM), groups 2<sup>nd</sup> (giving 5% DSS + AOM + 10mg/KgBW extract), group 3<sup>rd</sup> (giving 5% DSS + AOM + extract 20mg / KgBW), group 4<sup>th</sup> (giving 5% DSS + AOM 40mg/Kg BW), and group 5<sup>th</sup> as a negative control. In the first study aimed to determine the effect of ethanol extract of leaves of mango parasites (*Dendrophthode petandra*) of the cellular immune response in mice model of colon cancer was made acutely. At week-11<sup>th</sup> colon removed and preparations were made to determine the immunohistochemical expression of COX2 and the percentage of cells that excrete T lymphocytes (CD4 + Foxp3+) in mesentric lymphnode measured using flowcytometry techniques.

The results showed that administration of 5% DSS through drinking water after a single dose of AOM injection of 10 mg / kg can cause colon cancer in BALB / c mice after treatment for 11 weeks. Parasitic leave of Mango extract (*Dendrophthoe pentandra*) 40mg/KgBW can lower COX2 expression in colon cancer ( $p < 0.05$ ) and the expression of anti inflammatory cytokines TGF- $\beta$ , and increased the percentage of cells Treg (CD4 + Foxp3+).



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