

RINGKASAN

PKVAS (Penyakit Kardiovaskular Atherosklerosis) merupakan persoalan kesehatan yang terus mendapat perhatian karena masih tingginya angka kesakitan dan kematian yang diakibatkannya di seluruh dunia. Salah satu penyebabnya adalah radikal bebas (*Reactive Oksigen Spesies / ROS*). Sumber ROS yang potensial adalah stress fisik, yang dapat disebabkan oleh aktifitas fisik (olah raga) berlebihan. Peran radikal bebas dalam proses atherogenesis diantaranya adalah melalui reaksi peroksidasi LDL, dimana Ox-LDL dan hasil metabolitnya, antara lain MDA diketahui merupakan kontributor yang nyata pada proses atherosklerosis.

Antioksidan secara umum terbukti dapat menetralkan aktifitas radikal bebas. Propolis, mempunyai potensi sebagai antioksidan kuat, tetapi apakah propolis mempunyai potensi atheroprotektif? karena pada kenyataannya propolis telah digunakan sebagai salah satu makanan kesehatan bagi para atlet nasional di beberapa negara.

Mengingat reaktivitas dari radikal bebas yang terbentuk pada aktifitas fisik berlebihan, dan potensi atheroprotektif dari propolis yang belum diketahui maka penelitian ini perlu dilakukan untuk mengungkapkan hal tersebut, yaitu dengan mengukur kadar MDA darah dan IMT a. carotis communis pada tikus putih yang diberi stressor.

Penelitian ini merupakan penelitian eksperimental dengan menggunakan 32 ekor tikus putih (*Rattus norvegicus*) yang dibagi dalam 4 kelompok secara random, yaitu kelompok yang hanya diberi plasebo (K1=kontrol negatif); kelompok yang diberi propolis (K2=kontrol positif); kelompok yang diberi stressor (P1=perlakuan 1); kelompok yang diberi stressor dan propolis (P2=perlakuan 2). Perlakuan diberikan selama 30 hari. Sampel yang didapat berupa sampel darah dan potongan a. carotis communis. Kadar MDA darah diperiksa dengan menggunakan metode TBARS, sedangkan IMT a. carotis communis dibuat sediaan histologis dengan pewarnaan VvG dan diukur menggunakan mikrometer dengan pembesaran 400x.

Data yang diperoleh diuji dengan *multivariate analysis of variance*, dan menunjukkan bahwa pemberian propolis pada kelompok yang diberi stressor, terbukti secara signifikan ($p < 0.01$) dapat mencegah peningkatan kadar MDA darah dan penebalan IMT a. carotis communis.

Dari penelitian ini dapat disimpulkan bahwa secara *in vivo* propolis merupakan senyawa yang mempunyai potensi sebagai antioksidan dan atheroprotektif. Disarankan untuk dilakukan penelitian lebih lanjut mengenai potensi antioksidan dari propolis dengan mengukur variabel-variabel yang lebih spesifik, seperti kadar radikal bebas dan Ox-LDL darah.

SUMMARY

Cardiovascular Atherosclerosis Disease is a health problem that gets a continually attention because of high morbidity and mortality in all over the world. One of the cause is the free radical (*Reactive Oxygen Species / ROS*). The potential source of ROS is physical stress caused by over physical activity/exercise. The free radical role in atherogenesis through LDL peroxydation reaction, where the Ox-LDL and its metabolite result, such as MDA, is known to be the real contributor in the atherosclerosis process.

Antioxydant is commonly proved can neutralize activity of free radicals. Propolis, has high potency of antioxydant. But the question was: Did the propolis hae a antiatherogenic potencial? Regarding the fact that the propolis is used in national athlete as supplement.

Considering the reactivity of free radical that is formed in over physical activity, and the unknown atheroprotective potency of propolis, so this research needs to be held to reveal it that is by measuring the MDA level and the IMT carotid artery on stressed rats.

The objective of this study was to examine *in vivo* antioxydant and antiatherogenic potency of propolis by assessing its effect administration, againts serum MDA level and carotid intima-media thickness on stressed rats.

Thirty two rats (*Rattus norvegicus*) of *Wistar* strain, with the age of 3 months, the grouped randomly into four groups (n=8 per group) as K1, K2, P1, and P2 respectively; negative control given by placebo only; positive control group given propolis dose of 25mg/rat; group that was given by stressor only; group that was given by a stressor and propolis dose of 25mg/rat.

The treatment was given everyday, for 30 days. On the 30th day, blood serum and carotid artery were taken for data measurements. The blood serum MDA levels was measured with TBARS method and intima-media thickness of carotid artery was measured by micrometer.

The result of *multivariate analysis of variance test* revealed that there was a significant difference ($p < 0.01$) among groups. It's means that the effect of

propolis administration was effectively inhibited intima-media thickness of a. carotid communis, as well as decreased MDA level on stressed rats.

It might be concluded that propolis dose 25mg/rat could affect decreasing MDA level, and could affect inhibiting thickness of IMT carotid artery on stressed rat. In other words, propolis was potential as antioxydant and antiatherogenic agents *in-vivo*. It is suggested to hold the further research about the antioxydant potency of propolis by measuring more specific variables, such as the blood free radical and Ox-LDL levels.

ABSTRACT

The objective of this study was to examine in vivo antioxidant and antiatherogenic potency of propolis by assessing its effect administration, against serum MDA levels and carotid intima-media thickness on stressed rats.

Thirty two rat (*Rattus norvegicus*) of Wistar strain, with the age of 3 months, the grouped randomly into four groups (n=8 per group) as K1, K2, P1, and P2 respectively for; positif control group given by placebo only; negative control group given propolis dose of 25 mg/rat; group that was given by stressor only; group that was given by stressor and propolis dose of 25 mg/rat.

The treatment was given everyday, for 30 days. On the 30th day, blood serum and carotid artery were taken for data measurements. The blood serum MDA levels was measured with TBARS method and the intima-media thickness of carotid artery was measured by micrometer.

The result of multivariate analysis of variances test revealed there was significant difference ($p < 0,01$) among groups. It's means that the effect of propolis administration was effectively inhibited intima-media thickness of carotid artery, as well as decreased MDA level on stressed rats. It might be that propolis was potencial as antioxidant and antiatherogenic agents in vivo.

Keywords: stress physic, propolis, malondialdehyde, intima-media thickness of carotid artery.