

**Aktivitas dan Efektivitas Antioksidan Ubi Jalar (*Ipomoea batatas* (L.) Lam.)  
Kultivar Lokal Terhadap Profil Lipoprotein Serum Darah dan  
Mikroanatomi Aorta Tikus Putih (*Rattus norvegicus* L.) Hiperlipidemia**

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**INTISARI**

Hiperlipidemia dapat mengakibatkan atherosklerosis, hal ini karena oksidasi LDL. LDL teroksidasi mudah menembus tunika intima sehingga menyebabkan adhesi monosit membentuk makrofag dan kemudian membentuk *foam cell* setelah mengikat LDL. Proses ini selanjutnya akan membentuk *plaque*, pengerasan pembuluh darah dan merangsang otot polos menembus tunika intima dan berproliferasi sehingga menyempitkan lumen pembuluh darah. Ubi jalar adalah umbi-umbian yang kaya antioksidan. Penelitian ini bertujuan untuk mengetahui aktivitas dan efektivitas antioksidan tiga kultivar ubi jalar terhadap profil lipoprotein dan mikroanatomi aorta tikus putih hiperlipidemia. Penelitian ini menggunakan 25 ekor tikus putih (*Rattus norvegicus* L.) jantan dengan berat badan 150 – 200 g. Sebelum perlakuan, 20 ekor tikus putih dibuat hiperlipidemia dengan memberikan minyak babi dan kolesterol murni selama 35 hari. Setelah itu, tikus putih dikelompokkan menjadi 5 kelompok dengan 5 ulangan. Kelompok kontrol diberi akuades, kelompok kontrol diberi minyak babi dan kolesterol murni (hiperlipidemia), dan 3 kelompok hiperlipidemia diberi perlakuan jus ubi jalar Kapasan, Kuning Madu dan biru Mangsi. Dosis minyak babi 2 ml/200 g BB dan kolesterol murni 8,1 mg/1 ml minyak babi, sedangkan dosis jus ubi jalar 3,6 ml/200 g BB dan pemberian dilakukan secara oral selama 28 hari. Sampel darah diambil 1 ml melalui sinus orbitalis mata pada perlakuan 0 hari, 14 hari dan 28 hari, selanjutnya dilakukan pengujian kadar kolesterol total, LDL, HDL dan trigliserida menggunakan spektrofotometer. Aorta diambil di bagian lengkung aorta dan pembuatan sediaan mikroanatomi aorta menggunakan metode parafin dengan pewarnaan HE dilakukan setelah perlakuan 28 hari. Analisis data menggunakan uji Kolmogorov-Smirnov, dilanjutkan dengan uji Anova ( $\alpha = 0,05$ ) dan uji LSD dengan selang kepercayaan 95 %. Struktur jaringan aorta pada sediaan mikroanatomi dianalisis dengan analisis deskriptif. Hasil penelitian menunjukkan bahwa jus ubi jalar ungu kultivar Biru Mangsi memiliki aktivitas antioksidan tertinggi dan pemberian jus ubi jalar kultivar lokal belum dapat menurunkan kadar kolesterol total dan kadar LDL, namun telah dapat menaikkan kadar HDL dan menurunkan kadar trigliserida serum darah tikus putih secara bermakna setelah 28 hari perlakuan, selain jus ubi jalar juga memperbaiki jaringan aorta yang rusak pada tikus putih hiperlipidemia.

**Kata Kunci:** *Ipomoea batatas* (L.) Lam., antioksidan, oksidasi LDL, profil lipoprotein, aorta

**Activity and Effectivity of Antioxidant in Local Cultivar Sweet Potatoes (*Ipomoea batatas* (L.) Lam.) to Lipoprotein Profile of Blood Serum and Microanatomy of Aortic in Hyperlipidemic Rats (*Rattus norvegicus* L.)**

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**ABSTRACT**

Hyperlipidemic could lead into atherosclerosis because of LDL oxidized. The LDL oxidized is easier to penetrate tunika intima, then triggers monocyct adhesion to form macrofag and after that it forms foam cell after binding LDL oxidized. This process would form plaque, elasticity loss on blood vessels, smooth muscle prolifiration and finally tighten blood vessels. Sweet potatoes are tuber that have antioxidant activity. The purpose of this research is to observe the activity and effectivity of three local cultivars of sweet potatoes to lipoprotein profile of blood serum and microanatomy of aortic in hiperlipidemic rats. This research used 25 male rats weighed 150 – 200 g. Before treatment, 20 rats were treated to be hyperlipidemic using pig oil and pure cholesterol for 35 days. After pre treatment, the rats were grouped into 5 groups with 5 repeats. Control group was treated by aquadest, another control group was treated by pig oil and pure cholesterol (hyperlipidemic), and three hyperlipidemic groups was treated by white sweet potatoe cultivar Kapasan juice, yellow sweet potatoe cultivar Kuning Madu juice, and purple sweet potatoe cultivar Biru Mangsi juice. Pig oil doses 2 ml/200 g BW, pure cholesterol doses 8.1 mg/1 ml pig oil and sweet potato juice doses 3.6 ml/200 g BW. Treatment by oral was conducted for 28 days. Blood sample was taken 1 ml from sinus orbitalis of eye in treatment 0, 14 and 28 days and then cholesterol, LDL, HDL and triglyserid level were measured by spectrophotometer. Aortic was taken from curve aortic and microanatomy slides were performed by using paraffine method and HE staining after 28 days treatment. Data were analyzed by using Kolmogorov-Smirnov (distribution) continued by Anova ( $\alpha = 0.05$ ), and Least Significant Difference (LSD) test, while microanatomy of aortic slides were analyzed by using descriptive analysis. The result of this research shows that the purple sweet potatoe cultivar Biru Mangsi has the highest antioxidant activity and administration local cultivar of sweet potatoes juice is not effective to decrease cholesterol and LDL level, but it is effective to increase HDL level and decrease triglyserid level of rats blood serum significantly after 28 days treatment. Furthermore, local cultivar of sweet potatoes juice could repair the defect of aortic tissue in hyperlipidemic rats.

**Key words:** *Ipomoea batatas* (L.) Lam., antioxidant, LDL oxidized, lipoprotein profile, aortic