

**Arif Nur Muhammad Ansori. 2016. Efek Ekstrak Kulit Buah Manggis (*Garcinia mangostana* L.) terhadap Kadar Kreatinin Plasma dan Struktur Histologi Ginjal Mencit (*Mus musculus*) Diabetik. Skripsi ini di bawah bimbingan Drs. Saikhu Akhmad Husen, M.Kes. dan Dr. Dwi Winarni, M.Si., Departemen Biologi, Fakultas Sains dan Teknologi, Universitas Airlangga, Surabaya.**

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### ABSTRAK

Penelitian ini bertujuan untuk mengetahui pengaruh ekstrak kulit buah manggis (*Garcinia mangostana* L.) terhadap kadar kreatinin plasma dan kerusakan tubulus proksimal ginjal pada mencit (*Mus musculus*) diabetik. Penelitian ini bersifat eksperimental dengan Rancangan Acak Lengkap (RAL). Hewan coba yang digunakan sebanyak 36 ekor mencit jantan galur Balb/c. Hewan coba dibagi menjadi 6 kelompok, yaitu KN (kontrol normal), KD (kontrol diabetik), KM (kontrol metformin), dan P (kelompok perlakuan) yang terdiri dari P1 (diberi perlakuan ekstrak kulit buah manggis dosis 50 mg/kg BB), P2 (diberi perlakuan ekstrak kulit buah manggis dosis 100 mg/kg BB), dan P3 (diberi perlakuan ekstrak kulit buah manggis dosis 200 mg/kg BB). Pemberian suspensi ekstrak kulit buah manggis dan metformin dilakukan per oral selama 14 hari pada mencit diabetik. Induksi diabetes dilakukan dengan injeksi intraperitoneal STZ *multiple low-dose* 30 mg/kg BB/hari selama 5 hari berturut-turut. Pada hari ke-15 dilakukan pengambilan darah dan organ ginjal. Penentuan kadar kreatinin plasma dilakukan dengan metode *Jaffe reaction*. Irisan histologi ginjal setebal 5  $\mu$ M dibuat dengan metode parafin dan pewarnaan *Hematoxylin-Eosin*. Data kadar kreatinin plasma dan tingkat kerusakan tubulus proksimal ginjal (jumlah sel normal, bengkak, dan nekrosis) dianalisis dengan uji *One-Sample* Kolmogorov-Smirnov untuk mengetahui distribusi data dan uji Levene untuk mengetahui homogenitas variansi. Selanjutnya, dilakukan uji *One Way* Anova untuk mengetahui pengaruh perlakuan dan uji Duncan untuk mengetahui beda antar kelompok perlakuan. Hasil penelitian menunjukkan bahwa pemberian berbagai dosis ekstrak kulit buah manggis berpengaruh menurunkan kadar kreatinin plasma dan memperbaiki kerusakan tubulus proksimal ginjal mencit diabetik. Pemberian ekstrak kasar kulit buah manggis dengan dosis 100 mg/kg BB lebih memiliki efektivitas untuk menurunkan kadar kreatinin plasma dan memperbaiki kerusakan tubulus proksimal ginjal mencit diabetik.

Kata kunci: *Garcinia mangostana* L., kerusakan tubulus proksimal ginjal, kreatinin plasma, mencit diabetik

**Arif Nur Muhammad Ansori. 2016. Effects of Mangosteen (*Garcinia mangostana* L.) Peel Extract on Plasma Creatinine and Histological Structure of Kidney in Diabetic Mice (*Mus musculus*). This undergraduate thesis is guided by Drs. Saikhu Akhmad Husen, M.Kes. and Dr. Dwi Winarni, M.Si., Department of Biology, Faculty of Science and Technology, Airlangga University, Surabaya.**

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### ABSTRACT

This research was aimed to determine the effects of mangosteen (*Garcinia mangostana* L.) peel extract on plasma creatinine and renal proximal tubular of kidney in diabetic mice (*Mus musculus*). This research was an experimental research with Completely Randomized Design (CRD). The experimental animal used were 36 strain male Balb/c mice. The samples were divided into 6 groups, namely KN (normal control), KD (diabetic kontrol), KM (metformin control), and P (treatment group) consisting of P1 (dose of 50 mg/kg body weight of mangosteen peel extract), P2 (dose of 100 mg/kg body weight of mangosteen peel extract), as well as P3 (dose of 200 mg/kg body weight of mangosteen peel extract). Administration of mangosteen peel extract and metformin suspension conducted by per oral for 14 days in diabetic mice. Induction of diabetes is conducted by intraperitoneal injection of STZ multiple low-dose 30 mg/kg body weight daily for five consecutive days. On the 15<sup>th</sup> day, the blood and kidney were taken. Levels of plasma creatinine determined by Jaffe reaction method. Kidney histological sections as thick as 5  $\mu$ M is made with paraffin methods and Hematoxylin-eosin staining. Data of plasma creatinine and renal proximal tubular damage levels (number of normal, swelling, and necrosis cells) were analyzed using the One-Sample Kolmogorov-Smirnov test to determine the distribution of the data and Levene test to determine the homogeneity of the variance. Furthermore, One Way Anova test was performed to determine the effect of the treatment and Duncan test to find out the difference between the treatment groups. The results showed that administration of mangosteen peel extract has affects of lowering levels of plasma creatinine and ameliorates renal proximal tubular of kidney in diabetic mice. Administration of 100 mg/kg body weight of mangosteen peel extract have more effective to lowered levels of plasma creatinine and ameliorates renal proximal tubular of kidney in diabetic mice.

Keywords: Diabetic mice, *Garcinia mangostana* L., plasma creatinine, renal proximal tubular damage