

PENGARUH *INTERMITTENT FASTING* TERHADAP EKSPRESI SIRT-1 PANKREAS PADA MENCIT BALB-C

Suryani, M.T.R.¹, Fidianingsih, I.², Nurmasitoh, T.³

¹Mahasiswa Pendidikan Dokter Fakultas Kedokteran Universitas Islam Indonesia

²Departemen Histologi Klinik Fakultas Kedokteran Universitas Islam Indonesia

³Departemen Fisiologi Fakultas Kedokteran Universitas Islam Indonesia

meilantri24@gmail.com

INTISARI

Latar belakang: Obesitas dapat menyebabkan resistensi insulin sehingga berisiko menimbulkan berbagai penyakit metabolik. Intervensi terhadap obesitas berupa restriksi kalori dapat mencegah penyakit metabolik melalui peningkatan SIRT-1. SIRT-1 adalah protein yang dapat mencegah apoptosis sel pankreas, sehingga mencegah resistensi insulin. Model puasa *intermittent fasting* (IF) diduga dapat menginduksi SIRT1 sehingga dapat menjadi tatalaksana alternatif untuk obesitas.

Tujuan : Tujuan penelitian ini untuk mengetahui pengaruh *Intermittent Fasting* terhadap ekspresi SIRT-1 Pankreas tikus BALB-C

Metode : Penelitian ini merupakan penelitian eksperimental dengan *post test control group design* dengan menggunakan 15 ekor mencit BALB-C dibagi secara acak menjadi tiga kelompok. Kelompok AL diberi pakan standar (AIN93) dan minum *ad libitum* setiap hari. Kelompok HF diberi perlakuan pemberian pakan tinggi lemak dan minum setiap hari. Kelompok IF (kelompok uji) diberi perlakuan puasa 14 jam (pukul 17.00 hingga pukul 07.00) setiap selang satu hari, diberi pakan standar dan minum *ad libitum* saat tidak berpuasa selama 2 bulan. Ekspresi SIRT-1 dilakukan menggunakan IHC setelah embedding dengan paraffin pada jaringan pankreas. Penelitian ini menggunakan metode analisis statistik *one-way ANOVA*.

Hasil : Hasil penelitian menunjukkan ekspresi SIRT-1 Pankreas IF, HF dan AL berturut-turut adalah $6,22 \pm 0,26$; $3,60 \pm 0,27$ dan $4,24 \pm 0,18$ dengan nilai $p=0,000$.

Simpulan : Terdapat pengaruh *intermittent Fasting* terhadap ekspresi SIRT-1 pankreas mencit BALB-C.

Kata kunci: *Intermittent fasting, Sirtuins, SIRT-1 Pankreas.*

THE EFFECT OF INTERMITTENT FASTING ON PANCREAS SIRT-1 EXPRESSION IN BALB-C MICE

Suryani, M.T.R.¹, Fidianingsih, I.², Nurmasitoh, T.³

¹Medical Education Students, Faculty of Medicine, Islamic University of
Indonesia

²Department of Clinical Histology, Faculty of Medicine, Islamic University of
Indonesia

³Physiology Department, Faculty of Medicine, Islamic University of Indonesia
meilantri24@gmail.com

ABSTRACT

Background : Obesity is a risk factor for a number of very significant metabolic diseases such as cancer, cardiovascular disease and diabetes. Therefore, interventions are needed to prevent the occurrence of diseases caused by obesity. Previous studies have reported that intermittent fasting is the most powerful approach to prevent metabolic diseases from increasing SIRT-1. SIRT-1 is a free protein group of Nicotinamide Adenine Dinucleotide (NAD) which plays a role in metabolism and response to stress, so SIRT-1 has the potential to prevent metabolic diseases and can increase life span. In this study, researchers wanted to find out whether there were differences in the expression of SIRT 1 in the pancreas between fasted and non-fasted mice.

Objective : The purpose of this study was to determine the expression of pancreas SIRT-1 between the Intermittent Fasting (IF), High Fat (HF) and *ad libitum* (AL) groups.

Methods : This study was an experimental study with a post test control group design using 15 BALB-C mice divided randomly into three groups. The AL group was given standard feed (AIN93) and drink *ad libitum* every day. The HF group was given treatment for high-fat feed and drink every day. The IF group (test group) was given intermittent fasting treatment with a duration of 14 hours fasting (17:00 to 07:00) every interval of one day, given standard feed and drinking *ad libitum* when not fasting. SIRT-1 expression was carried out using IHC after embedding with paraffin. This experiment use statistic analyze method *one-way ANOVA*.

Result : The results showed pancreas SIRT-1 expression IF, HF and AL respectively were $6,22 \pm 0,26$; $3,60 \pm 0,27$ and $4,24 \pm 0,18$ with p values= 0,00.

Conclusion : There is an intermittent fasting effect on pancreas SIRT-1 expression in BALB-C mice.

Keyword : *Intermittent fasting, SIRT-1 Expression, pancreas SIRT-1.*

