

## Pengaruh Puasa Intermiten 5:2 terhadap Kadar Glutation Tereduksi (GSH) pada Pria Dewasa dengan Obesitas = The Effect of Intermittent Fasting 5:2 on Reduced Glutathione (GSH) Levels in Adult Males with Obesity

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### Abstrak

Obesitas ditandai dengan akumulasi lemak berlebih dan menyebabkan stres oksidatif. Apabila tidak ditangani, stres oksidatif dapat menurunkan kualitas hidup, memicu berbagai penyakit, dan meningkatkan mortalitas. Salah satu cara untuk mengurangi stres oksidatif adalah dengan puasa intermiten. Puasa intermiten dapat meningkatkan pertahanan antioksidan, termasuk glutathione tereduksi (GSH) sebagai antioksidan endogen sehingga mengurangi radikal bebas dan mencegah stres oksidatif. Penelitian dilakukan dengan metode uji klinis acak dengan kontrol. Subjek penelitian adalah karyawan pria dewasa berusia 19-59 tahun dengan IMT 25 kg/m<sup>2</sup>. Subjek terbagi menjadi kelompok kontrol dan puasa melalui randomisasi sederhana. Puasa intermiten 5:2 dilakukan setiap hari Senin dan Kamis selama 8 minggu serta tidak diperkenankan makan dan minum selama 14 jam berpuasa. Kadar GSH diukur menggunakan metode Ellman sebelum dan sesudah perlakuan pada sampel leukosit yang tersimpan dari penelitian sebelumnya oleh Yudhistina K, et al. Pengaruh puasa intermiten 5:2 terhadap kadar GSH dianalisis dengan uji perbandingan rerata Wilcoxon dan Mann-Whitney dengan batas kemaknaan 5%. Kadar GSH sesudah perlakuan menurun signifikan pada kelompok kontrol ( $p = 0,01$ ) dengan kadar GSH 0,433 (0,041-2,372)  $\mu\text{mol/mL}$  menjadi 1,247 (0,415-2,631)  $\mu\text{mol/mL}$  dan kelompok puasa ( $p < 0,001$ ) dengan kadar GSH 0,604 (0,080-2,976)  $\mu\text{mol/mL}$  menjadi 1,874 (0,052-6,937)  $\mu\text{mol/mL}$ . Kadar GSH sesudah perlakuan pada kelompok puasa lebih rendah signifikan ( $p = 0,045$ ) dibandingkan kelompok kontrol. Selisih perubahan kadar GSH pada kelompok puasa lebih tinggi signifikan ( $p = 0,041$ ) dibandingkan kelompok kontrol. Puasa intermiten 5:2 selama 8 minggu dapat meningkatkan kadar GSH pada pria dewasa dengan obesitas.

.....Obesity is characterized by excessive fat accumulation and correlates with oxidative stress, which can reduce quality of life, lead to various diseases, and increase mortality. An alternative way to reduce oxidative stress is intermittent fasting which can increase antioxidant defences, including reduced glutathione (GSH) as an endogenous antioxidant, thereby reducing free radicals and preventing oxidative stress. This study used a randomized controlled clinical trial. The subjects were male employees aged 19-59 years with BMI > 25 kg/m<sup>2</sup> divided into control and fasting groups through simple randomization. Intermittent fasting 5:2 was done every Monday and Thursday for 8 weeks and subjects were not allowed to eat or drink during fasting. GSH levels were measured using the Ellman method in leukocytes stored from previous study by Yudhistina K, et al. The effect of intermittent fasting 5:2 on GSH levels was analyzed by the Wilcoxon and Mann-Whitney tests with a significance limit of 5%. GSH levels post-intervention decreased significantly both in the control group ( $p = 0.01$ ) with GSH levels of 0.433 (0.041-2.372)  $\mu\text{mol/mL}$  to 1.247 (0.415-2.631)  $\mu\text{mol/mL}$  and the fasting group ( $p < 0.001$ ) with GSH levels of 0.604 (0.080-2.976)  $\mu\text{mol/mL}$  to 1.874 (0.052-6.937)  $\mu\text{mol/mL}$ . GSH levels post-intervention in the fasting group were significantly lower ( $p = 0.045$ ) than in the control group. The changes in GSH levels in the fasting group was significantly higher ( $p = 0.041$ ) than in the control group. Intermittent fasting 5:2 for 8 weeks can

increase GSH levels in adult males with obesity.