

The Effect of intermittent fasting towards brain carbonyl level in White New Zealand Rabbit = Efek puasa intermitten terhadap kadar karbonil pada otak kelinci New Zealand White

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Abstrak

Latar Belakang: Intermittent fasting (IF) dan prolonged fasting (PF) merupakan bagian dari puasa yang meliputi pola makan waktu puasa dan waktu tidak puasa dalam sehari. Ada banyak manfaat terkait puasa dan salah satunya adalah IF dapat mengurangi stres oksidatif yang bermanfaat bagi otak. Karbonil, biomarker stres oksidatif yang irreversible dan universal telah dikaitkan dengan penuaan sel, jaringan, organ, dan penyakit terkait usia. Oleh karena itu, penelitian ini dilakukan untuk melihat apakah ada pengaruh puasa terhadap kadar protein karbonil di otak. Metode: Penelitian ini menggunakan sampel jaringan otak yang diperoleh dari 15 ekor kelinci white New Zealand yang dikelompokkan ke dalam tiga perlakuan pemberian pakan yang berbeda yaitu 5 kelompok kontrol, 5 kelompok IF (dipuaskan 16 jam), dan 5 kelompok PF (dipuaskan 40 jam). Sampel diperlakukan sesuai perlakuan masing-masing selama tujuh hari berturut-turut. Kadar karbonil kemudian diukur dengan spektrofotometer pada panjang gelombang 390 nm. Data dianalisis menggunakan IBM SPSS. Hasil Penelitian: Semua sampel terdistribusi normal ($p > 0,05$), namun pengaruh puasa intermitten (IF) dan puasa berkepanjangan (PF) terhadap kadar karbonil otak pada kelinci White New Zealand tidak signifikan. Kadar karbonil sampel IF lebih rendah daripada PF dengan rata-rata dan standar kesalahan masing-masing $365,4 \pm 24,2$ dan $409,1 \pm 44,7$ nMol/mg protein. Kesimpulan: Meskipun tidak signifikan, perlakuan IF dan PF satu minggu yang dilakukan pada kelinci White New Zealand mampu menurunkan kadar karbonil pada otak. IF mampu menurunkan lebih banyak protein karbonil dibandingkan PF.

.....Introduction: Intermittent fasting (IF) and prolonged fasting (PF) is a part of fasting that includes eating pattern of fasting-time and non-fasting time in a day. There are many benefits related to fasting and one of them is that IF can reduce oxidative stress that benefits the brain. Carbonyl, an irreversible and universal marker of oxidative stress has been linked to cell, tissue, organ aging and age-related diseases hence this research is conducted to see whether there are any effects of fasting towards protein carbonyl level in the brain. Methods: This research uses brain tissue sample obtained from 15 white New Zealand rabbit that are grouped into three different feeding treatments: 5 control groups, 5 IF (16 h fasting time) groups, and 5 PF (40 h fasting time). They are treated accordingly for seven days straight. Level of carbonyl then is measured by spectrophotometer at 390 nm wavelength. The data was analyzed using IBM SPSS. Result: All samples are normally distributed ($p > 0.05$), however the effect of IF and PF towards brain carbonyl level in white New Zealand rabbit are not significant. The carbonyl level of IF group samples are reduced more than PF group with mean and standard of error of 365.4 ± 24.2 and 409.1 ± 44.7 nMol/mg protein respectively. Conclusion: Although insignificant, one-week treatment of IF and PF done on White New Zealand rabbit are able to decrease carbonyl level in their brain, with IF being able to reduce more protein carbonyl than PF.