

**ABSTRACT**

**THE EFFECT OF EXERCISE INTENSITY TO BDNF LEVEL IN THE HIPPOCAMPUS OF FRUCTOSE-INDUCED MICE**

**Misbakhul Munir, Muhammad Miftahussurur, Purwo Sri Rejeki**

**Introduction:** several research show that there is negative correlation between obesity and cognitive function. Physical exercise has a lot of benefits, including the increase of cognitive function and memory. The mechanism that underlying the effect of exercise in increasing memory involves Brain-Derived Neurothropic Factor (BNDF), but which intensity causing this effect is still debatable.

**Objective:** to prove the effect of different exercise intensity to BDNF level in mice hippocampus.

**Methods:** forty mice, male, body weight 20-30 grams were divided into five groups. Those were group without fructose induction and exercise, group without exercise only, and three exercise group (low, moderate, and high-intensity). The load for low, moderate, and high intensity was 3%, 6%, and 9% of body weight respectively. Before treatment began, mice had been administered by fructose solution via intragastric to increase fat mass. Exercise were given three times a week for 4 weeks. The hippocampus tissue was taken and then examined by ELISA method to determine the BDNF level.

**Results:** BDNF levels in group without fructose induction and exercise obtained a mean  $233,63 \pm 33,37$  pg/ml, in group without exercise only was  $199,85 \pm 38,10$  pg/ml, in the low-intensity-exercise group was  $208,46 \pm 44,48$  pg/ml, in the moderate-intensity-exercise group was  $232,97 \pm 30,40$  pg/ml, and in the high-intensity-exercise group was  $219,22 \pm 26,73$  pg/ml. Anova test results found no significant difference ( $p=0,306$ ) in BDNF level among five groups in this research.

**Conclusion:** swimming exercise with low, moderate, and high intensity has no effect on BDNF level in the hippocampus of fructose-induced mice.

**Keywords:** fructose-induced mice, swimming exercise, intensity, BDNF level, hippocampus