

## ABSTRACT

### Effect of Caffeine Per Oral on the Number of Neuron cell and The Thick of Granular Layer Dentate Gyrus Formatio Hippocampalis

#### An Experimental Laboratories In Male Rat (*Rattus norvegicus*) of Wistar Strain

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**Background.** The administration of caffeine can influence the adult neurogenesis in SGZ that play a role in learning and memory functions. Mechanism of neurogenesis by administration of caffeine through adenosine A1 receptor antagonis and Phosphodiesterase enzyme. Caffeine is expected to preventive the deterioration of learning and memory function due to age. **Purpose.** This study examines the effect of caffeine on the number of neuron cells and a thick layer of granular Dentate gyrus. It can evaluate the maturation stage of neurogenesis after migration from SGZ layer. **Method.** A total of 28 male rats (*Rattus norvegicus*) Wistar strain were divided into 4 groups of K, X1, X2, X3 are respectively given oral doses of 37.5 mg caffeine / kg / day, 56.2 mg / kg / day, and 75 mg / kg / day, once a day for 7 days. After treatment, the animals were sacrificed . The brain tissue was taken at parallel sections of the temporal lobe of hippocampalis formatio, to be made of histology preparations. **Result.** Data were obtained, analyzed by one-way ANOVA ( $p = 0.05$ ). The analysis shows a significant difference in the number of neuronal cells ( $p = 0.00$ ) and the granular layer thickness ( $p = 0.00$ ) between groups gyrus dentatus K and groups X1, X2 and X3. **Conclusion.** The administration of caffeine can increase the number of neuron cells and the thick layer of granular Dentate gyrus formatio hippocampalis.

**Keywords:** caffeine, neuron cells of granular layer, the thick of granular layer