

## ABSTRACT

Anandhita Restyaningrum. 24020120130066. Histomorphometry of the Duodenum of White Rats (*Rattus norvegicus* L.) after Supplementation of Beet Fruit Powder (*Beta vulgaris* L.). Under the guidance of Teguh Suprihatin and Silvana Tana.

Beetroot is a plant that was rich in nutrients, vitamins, minerals, and active compounds, so it had long been used as a traditional medicine and health supplement. The best-known content of beets was the betalain pigment which had good antioxidant activity. Consumption of beetroot had the potential to maintain health and improve the histological structure of the duodenum of white mice. This study aimed to analyze the effect of supplementation different doses of beetroot powder on duodenal histomorphometry and duodenal epithelial cell morphology in white rats. This research used a Completely Randomized Design (CRD) using 30 female white rats divided into 5 treatment groups and 6 replications. Treatment groups included control (P0), doze 10 mg beetroot powder/rat/day (P1), doze 20 mg beetroot powder/rat/day (P2), doze 30 mg beetroot powder/rat/day (P3), and doze 40 mg beetroot powder/rat/day (P4). The parameters observed were villi height, mucosal layer thickness, muscularis layer thickness, number of goblet cells, and morphology of duodenal epithelial cells. The research data were analyzed using ANOVA with a significance level of 5% and continued with the Duncan test on parameters that had significantly different ANOVA results. The results showed that the supplementation of beetroot powder had a significant difference ( $P < 0.05$ ) on the height of the villi, thickness of the mucous layer, and thickness of the muscularis layer but was not significantly different ( $P > 0.05$ ) on the number of goblet cells. Supplementation of beetroot powder also had no effect on the morphology of duodenal epithelial cells. This research concluded that supplementation beetroot powder had the potential to cause changes in the histological structure of the duodenum of white rats.

**Keywords:** *antioxidant, villi height, mucosal thickness, muscularis thickness, number of goblet cells*