

ABSTRACT

Putri Imel Panjaitan. 24020121120026. Microanatomy of the Ileum of Rats (*Rattus norvegicus*) After Exposure to *Polyethylene Terephthalate* (PET) Microplastics. Under the supervision of Agung Janika Sitasawi and Rizki Sandhi Titisari.

Polyethylene terephthalate (PET) is a plastic widely used for food and beverage packaging. The ileum is the last segment of the *intestinum tenue*, as the site of absorption of xenobiotics or antigens. This study aims to analyze how microplastics affect the microanatomy of the ileum. The study was conducted by giving drinking water contaminated with PET microplastics to 20 rats divided into four groups: the control group (standard drinking water), group P1 (0.005 mg microplastics/2 ml drinking water/day), P2 (0.05 mg microplastics/2 ml drinking water/day), and P3 (0.25 mg microplastics/2 ml drinking water/day). The variables measured and observed in this study were villus height, mucosal thickness, goblet cell count, and epithelial cell count. The data obtained were analyzed using ANOVA and followed by Duncan's test at a significance level of 5%. The results of the ANOVA test on villus height and the number of goblet cells in the ileum of rats (*Rattus norvegicus*) showed significant differences ($p < 0.05$), but the mucosal thickness showed no significant differences ($p > 0.05$). The most significant changes in villi were observed at a dose of 0.25 mg of microplastics/2 ml of drinking water/day, while changes in the number of goblet cells were observed at a dose of 0.005 mg/2 ml of drinking water/day. Observations of ileal epithelial cells revealed necrosis in treatments P1, P2, and P3. The findings of this study indicate that exposure to PET microplastics for 24 days can cause damage to the microanatomy of the ileum in rats (*Rattus norvegicus*).

Keywords: Microanatomy, polyethylene terephthalate, villi, goblet cells, mucosa