ABSTRACT

Faridah Luthfie Maryam. 24020121140200. The Effect of *Polyethylene Terephthalate* (PET) Microplastic Exposure on the Number of Graafian Follicles and Ovarian Weight in Wistar Rats (*Rattus norvegicus*). Under the supervision of Muhammad Anwar Djaelani and Rizki Sandhi Titisari.

Long-term exposure to microplastics, particularly PET, can lead to organ dysfunction however, their effects on the ovary are still rarely studied. This study aimed to analyze the effect of PET microplastic exposure on the number of De Graaf follicles and ovarian weight in Wistar white rats. The treatment groups consisted of a control (P0) and PET microplastic exposure at doses of 0.005 mg/2 mL/day (P1), 0.05 mg/2 mL/day (P2), and 0.25 mg/2 mL/day (P3). The observed parameters were the number of De Graaf follicles, granulosa cell damage score, and ovarian weight. Data were analyzed using ANOVA at α=0.05, followed by Duncan's test. The number of De Graaf follicles and granulosa cell damage scores showed significant differences ($P<0.05$) after treatment, whereas ovarian weight showed no significant difference ($P>0.05$). Increased granulosa cell damage, characterized by hydropic and vacuolar degeneration in P1 and P2, as well as pyknosis, karyorrhexis, and karyolysis in P3, indicates that PET microplastic exposure induces oxidative stress, defined as an imbalance between the production of ROS and the antioxidant defense system, leading to histological alterations in the ovary.

Keywords: *Polyethylene terephthalate (PET), microplastics, ovary, Graafian follicle, reproduction*