

ABSTRACT

Tasya Tazkiyah. 24020122140147. Histopathological Description of the Spleen of Sprague Dawley Rats (*Rattus norvegicus*) after Exposure to *Polyethylene Terephthalate* (PET) Microplastics. Supervised by Agung Janika Sitasiwi and Rasyidah Fauzia Ahmar.

Polyethylene terephthalate (PET) microplastics are plastic polymers commonly found in the environment and have the potential to cause biological effects on immune organs. Data regarding the lowest dose threshold of PET microplastic exposure capable of inducing histological changes in the spleens of white rats is currently unavailable; therefore, baseline data is needed as a reference for future research. This study aims to analyze the effects of PET microplastic exposure on the histopathological appearance of the spleens of male Sprague Dawley rats quantitatively via morphometry (spleen weight, spleen index, diameter and area of the white pulp, as well as diameter and area of the germinal center) and qualitatively through observation of the histopathological profiles of spleen sections. This study employed a completely randomized design with two groups, control and treatment each with 9 replicates. PET microplastics were administered orally via a feeding tube at a dose of 0.25 mg/day for 21 days to 6-week-old male Sprague Dawley rats. The spleen was isolated on day 22, and histological sections were prepared using Hematoxylin-Eosin staining. Results from the *Independent Samples T-Test* and *Mann-Whitney U Test* showed no significant differences between the control and treatment groups ($p > 0.05$). Qualitative observations indicated that the demarcation between the white pulp and the germinal center appeared more indistinct in the treatment group compared to the control; however, this change did not develop into measurable structural alterations. Exposure to 0.25 mg/day of PET microplastics for 21 days did not have a significant effect on the histological structure of the spleen in male Sprague Dawley rats.

Keywords: white pulp, germinal center, spleen index, morphometry