

## ABSTRACT

Nada Ahmad Rayhan. 24020121130080. The Effect of Secretome Umbilical Cord-Mesenchymal Stem Cells (SUC-MSCs) on IL-6 Levels and Liver Histological Structure in Diabetic Rats (*Rattus norvegicus*) Type II. Supervised by Kasiyati and PSN Masruri Sulistiyanto Ari.

Type II diabetes mellitus (T2DM) is a chronic disease characterized by hyperglycemia due to insulin resistance and  $\beta$ -cell dysfunction. This study aimed to evaluate the effect of Umbilical Cord-Mesenchymal Stem Cell secretome (SUC-MSCs) on interleukin-6 (IL-6) levels and liver histopathology in T2DM rat models. Twelve Wistar rats were divided into three groups: negative control (NaCl 0.5 cc), positive control (metformin), and treatment (SUC-MSCs 500  $\mu$ L/intraperitoneal injection). IL-6 levels were measured using ELISA, while liver histology was analyzed with hematoxylin-eosin staining and scored using the modified Ishak-HAI system. Data on IL-6 were analyzed using One-Way ANOVA followed by Tukey HSD, while histopathology was tested with Kruskal-Wallis, Mann-Whitney, and Spearman's rho correlation. Results showed that the highest mean IL-6 level was found in the SUC-MSCs group ( $38.83 \pm 4.79$  ng/mL) compared with the metformin group ( $33.32 \pm 2.06$  ng/mL) and the NaCl group ( $29.58 \pm 6.08$  ng/mL), with a significant difference between SUC-MSCs and NaCl ( $p=0.04$ ). Histopathological analysis revealed the most severe liver damage in the SUC-MSCs group, although the correlation between IL-6 levels and liver damage scores was not significant ( $r=0.5$ ;  $p=0.667$ ). In conclusion, SUC-MSCs at the applied dose did not demonstrate therapeutic potential in reducing inflammation or improving liver histological structure in T2DM rat models.

**Keywords:** Type II diabetes mellitus, IL-6, liver, secretome, UC-MSCs