Determination of Biomarker for Progression and Immunity Status of Patients with Type II Diabetes Mellitus as Comorbid of Covid-19

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ABSTRACT

Indonesia is ranked 5th in terms of the highest number of Diabetes Mellitus (DM) sufferers in the world. DM is the main co-morbid of cytokine storms that lead to poor Covid-19 outcomes. Advance Glycation End Products (AGEs) are the end products of protein glycation under conditions of hyperglycemia, which are suspected to play an important role in the pathogenesis of DM complications, while Extracellular Traps (ETs) are products of immune cells that play a role in the immune response against pathogens, also trigger blood clots and tissue damage. The general objective of this study was to determine the potential of AGEs and ETs as biomarkers in determining the progression and immunity of DM patients against pathogenic infections. The specific objective of this study was to determine the differences in Advance Glycation End Products (AGEs) and Extracellular Traps (ETs), as well as the relationship between the two in STZ-induced DM mice and those exposed to SA infection, during a period of 14 days of treatment. . This study was an in vivo experiment on male white rats with Wistar strain induced DM with Streptozotocin and infected with Staphylococcus aureus. Parameters examined were: plasma glucose and H2O2 levels with a spectrophotometer, CML, IL-8, MPO and CitH3 levels with ELISA. The results of this study were: 1) there was a significant difference in the mean levels of the DM progression parameters, namely H2O2 and CML between the treatment groups post STZ induction and SA infection and on the 7th and 14th day of treatment, 2) there were significant differences in the mean levels of the DM immunity parameters MPO, IL-8 and CitH3 which were significant between the treatment groups after STZ induction and SA infection and on the 7th and 14th day of treatment, as well as a strong correlation between CML with MPO and CitH3 on the 7th day, as well as a strong correlation between H2O2 and MPO on the 7th and 14th days and with CitH3 on the 3rd day. This research is a basic research with the current level of technological readiness at TKT 1 and is expected to end the study in TKT 2. The output of this research is a paper that was presented at the 9th ICRIEMS and will be published in proceedings indexed by the Scopus database (submitted). Mandatory outputs are draft articles that will be addressed to Heliyon Journal, SJR Q1 (manuscript in preparation), Sains Malaysiana, SJR Q2 (manuscript in preparation),

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