



Effects of Low Dose Aspirin on Caspase 3, TNF- α and Apoptotic Index Levels in Preclampsia Maternal Serum-Induced Placental Trophoblast Cell Line In Vitro

Akhmad Yogi Pramatirta^{1*}, Bremmy Laksono²,
Prima Nanda Fauziah³, Anita Deborah Anwar¹, Sofie Rifayani Krisnadi¹,
Debbie S. Retnoningrum⁴, Ani Melani Maskoen⁵, Erlina Widiarsih⁶

¹Department of Obstetrics and Gynecology, Faculty of Medicine, Padjadjaran University, Indonesia

²Department of Biochemistry and Molecular Biology, Faculty of Dentistry, Padjadjaran University, Indonesia

³Department of Medical Laboratory Technology, School of Health Sciences Jenderal Achmad Yani Cimahi, Indonesia

⁴School of Pharmacy, Bandung Institute of Technology, Indonesia

⁵Department of Oral Biology, Faculty of Dentistry, Padjadjaran University, Indonesia

⁶Laboratory of Molecular Genetic, Faculty of Medicine, Padjadjaran University, Indonesia

Abstract: Preeclampsia is a major cause in maternal mortality and morbidity. Placental apoptosis is found to be increased in preeclampsia and it is associated with caspase-8 activation on extrinsic pathway, followed by caspase-3 activation which is responsible as executioner caspase to generate apoptosis. Trophoblasts express tumor necrosis factor (TNF) that contain a cytoplasmic "death domain" that mediates apoptotic signals. Low dose aspirin is widely used in preventing preeclampsia reducing apoptosis induced by H₂O₂, and reduce ability of caspase-3 activation. This study aims to examine the difference between apoptotic index, TNF- α and caspase-3 expression in trophoblast cells induced by normal and preeclampsia maternal serum, and effects of aspirin on apoptotic index, TNF- α and caspase-3 in preeclampsia and normal-induced trophoblast. **Methods:** This was experimental study in laboratory. Apoptotic index was measured by Annexin V-Fluorescein Staining and expression of TNF- α and caspase-3 were performed by ELISA. **Results:** It was found that expression of TNF- α and caspase-3, and apoptotic index in preeclampsia serum-induced trophoblast cells were higher than normal and controls. Low dose aspirin of 0.5 mM showed significant decreased expression of TNF- α , caspase-3 and apoptotic index ($p < 0.05$) which equal normal and controls. **Conclusion:** Apoptotic index, expression of TNF- α and caspase-3 are affected by serum and aspirin dosage. **Keywords:** Aspirin, Apoptotic Index, Caspase 3, TNF- α , Preeclampsia, Trophoblast.