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Amelioration of acute kidney injury in lipopolysaccharide-induced sepsis by *Ginkgo biloba* extract 761

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Statement of the Problem: Sepsis is a severely deregulated inflammatory response to infection characterized by a systemic inflammatory state and multiple organ failure. Acute kidney injury, defined as a rapid renal dysfunction with severe tubular damage, is a serious complication of sepsis in intensive care unit patients with an extremely high mortality and its genesis is still unclear posing a difficulty for an effective treatment. Ginkgo biloba extracts are produced from the dried leaves of the Ginkgo tree and have been used as a traditional Chinese medicine for about 5000 years. Ginkgo biloba extract 761 (EGb 761) is reported to be a potent antioxidant and anti-inflammatory agent. The aim of this study was to evaluate the possible modulatory effects of EGb 761 pretreatment on renal inflammation during lipopolysaccharide (LPS)-induced acute kidney injury.

Methodology & Theoretical Orientation: Groups consisting of six adult male Spraque-Dawley rats each were divided into Control, Sepsis (LPS-*{E.coliO55:B5serotype}*), EGb 761, Sepsis + EGb 761 and Sepsis + Flunixin Meglumine. All administrations were injected intraperitoneally and the study lasted seven days. Oxidative stress parameters and histopathological changes were evaluated in the kidney tissue samples.

Findings: While the glutathione (GSH) level ($p<0.01$), the superoxide dismutase (SOD) activity ($p<0.01$) and the catalase (CAT) activity decreased significantly ($p<0.05$), the malondialdehyde (MDA) level increased significantly ($p<0.01$) in the sepsis group. In addition, the MDA levels were reduced significantly ($p<0.01$), but the levels of GSH ($p<0.01$), SOD ($p<0.01$) and CAT activities were increased significantly ($p<0.05$) in the Sepsis + EGb 761 and Sepsis + Flunixin Meglumine groups. Following the administration of LPS, it was observed that severe pathological damage and excessive apoptosis in the renal tissue samples in the sepsis group when compared with the control group. EGb 761 and Flunixin Meglumine pretreatments significantly alleviated these histopathological changes and induced apoptosis in the kidney tissues.

Conclusion & Significance: Our study results demonstrate that LPS-induced sepsis may lead to severe acute kidney injury. EGb 761 which has anti-inflammatory and antioxidant effects regulates the oxidant/antioxidant status and improves the acute kidney damage and it could be attractive candidates for cell therapy to treat sepsis.

Biography

Tuba Parlak AK completed her undergraduate studies in 2007 and her Doctoral Education in Department of Histology and Embryology at Health Sciences Institute in 2012. She has been working in Health High School at University of Munzur since 2013. Her specialty and interests are experimental studies, histology, clinical pathology, andrology, embriology and IVF (*In Vitro* Fertilization).

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