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Protective effect of *Lumbricus rubellus* Hoffmeister extract in experimental renal ischemia/reperfusion injury in the nephrectomy rats

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Acute kidney injury (AKI), an immediate loss of renal function, leads to high mortality, and ischemia-reperfusion (I/R) injury is considered as one of the main causes of AKI. Inflammation and oxidative stress are known to play an important role in AKI. On the other hand, the earthworm extract, used in traditional medicine, is known to possess various biological and pharmacological activities viz. antiapoptotic, anticoagulative, fibrinolytic, anti-inflammatory, antioxidative stress, peripheral nerve regeneration, bone regeneration and wound healing. Hence, in this study, we investigated the protective effect of the earthworm *Lumbricus rubellus* Hoffmeister extract (LE) after nephrectomy, against oxidative stress occurring during renal ischemia/reperfusion (I/R) injury. A total of 10-12 weeks old *Sprague Dawley* male rats were divided into five groups (n=8). Group I (control), Group II (I/R), Group III (I/R + 10 mg/kg LE), Group IV (I/R + 20 mg/kg LE) and Group V (I/R + 40 mg/kg LE). All rats except in Gr. I were applied ischemia for 45 min and reperfusion for 24 h. At the end of the experiment, superoxide dismutase (SOD), catalase (CAT), glutathione peroxidase (GPx) enzyme activities and malondialdehyde (MDA) levels were evaluated. In addition, kidney tissues were evaluated histologically. In results, the MDA and GPx level of the I/R group were found to be significantly higher than the control and LE groups. SOD activity of the control group did not differ when compared to LE groups and CAT levels were not significantly different between all groups. In addition, in Gr. III-V we observed nearly normal renal cortex and renal tubules. The present study, thus demonstrates that the extract of *L. rubellus* prevents renal I/R injury and induced biochemical and histological changes in the renal tissues in rats.

Keywords: Antioxidants, Earthworm extract, Kidney, Reactive oxygen species (ROS)