

## 8- SUMMARY

### **The effects of dexpanthenol on experimental intestinal ischemia reperfusion injury in rats**

**Purpose:** The purpose of this study is to examine the effects of dexpanthenol on ischemia reperfusion injury in intestine occurring after occlusion – reperfusion of superior mesenteric artery in rats.

**Method:** Fiftysix young and healthy female Wistar-Albino rats (weighing 200–250 g) were randomly divided into seven groups (n=8); control (group I), sham (group II), ischemia-reperfusion (group III, I/R group), dexpanthenol 250 mg/kg at the 30-min ischemic period (group IV, Pre 250), dexpanthenol 500 mg/kg at the 30-min ischemic period (group V), dexpanthenol 250 mg/kg at 1-min reperfusion period (group VI, Post 250), dexpanthenol at 1-min reperfusion period (group VII). The rats were anaesthetized by intraperitoneally injection of urethane (1.2 g mg/kg b.w.). A midline laparotomy was performed after shaving and local cleansing with an antiseptic solution. Intestines were exteriorized, and the superior mesenteric artery was dissected carefully and occluded using an atraumatic microvascular clip for 45 minutes. Then, the clamp was removed and reperfusion occurred for 120 minutes. After reperfusion, all rats were sacrificed and their small intestines were removed. The tissue levels of malondialdehyde (MDA) and activity levels of superoxide dismutase (SOD), catalase (CAT), nitric oxide (NO), myeloperoxidase (MPO), glutathione (GSH), glutathione reductase (GR) and glutathione peroxidase (GSHPx) were measured in small intestine specimens.

**Findings:** Activity levels of CAT in the I/R group were significantly increased compared to the control group ( $p < 0,05$ ). The GSH levels of the Pre 500, Post 250 and Post 500 groups were significantly higher than the I/R group ( $p < 0,05$ ). The GSH-Px activity levels of the I/R, Pre 250, Post 250 and Post 500 groups were significantly higher than the control group ( $p < 0,05$ ). The GSH-Px activity levels of the Pre 250 group were significantly increased compared to the sham and Pre 500 groups ( $p < 0,05$ ). The GSH-Px activity levels of the Post 500 group were significantly higher than the Pre 500 group ( $p < 0,05$ ). ). The SOD activity levels of the Post 250 group were significantly higher than the I/R group ( $p < 0,05$ ). The SOD activity levels of the Post 500 group were significantly lower than the Pre 500 ve Post 250 groups ( $p < 0,05$ ). Tissue levels of MDA were significantly lower in the group Post 500

compared to the I/R group ( $p < 0,05$ ). The MPO activity levels of the Post 500 group were significantly lower than the I/R and Pre 250 groups ( $p < 0,05$ ). The NO activity levels of Post 500 group were significantly lower than the I/R group ( $p < 0,05$ ). There were no significant differences between GR levels of all study groups.

**Conclusion:** The results of this study showed that intraperitoneally administration of 500 mg/kg dexpanthenol just after reperfusion attenuates the effects of intestinal ischemia reperfusion injury in rats. Since this is a first demonstration for the use of dexpanthenol in intestinal ischemia-reperfusion injury, the results of the present study may be pioneer for the future studies.

**Key Words:** Intestinal ischemia-reperfusion, antioxidative enzymes, lipid peroxidation, dexpanthenol

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