

## Albendazole Ameliorates Inflammatory Response in a Rat Model of Acute Mesenteric Ischemia Reperfusion Injury

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**Abstract :** Background: Acute mesenteric ischemia is known as a life-threatening condition. Re-establishment of blood flow in this condition can lead to mesenteric ischemia reperfusion (MIR) injury, which is accompanied by inflammatory response. Still, clear blueprint of inflammatory mechanism underlying MIR injury has not been provided. Interestingly, Albendazole has exhibited notable effects on inflammation and cytokine production. In this study, we aimed to evaluate outcomes of MIR injury following pretreatment with Albendazole with respect to assessment of mesenteric inflammation and ischemia threshold. Methods: Male rats were randomly divided into sham operated, vehicle treated, Albendazole 100 mg/kg, and Albendazole 200 mg/kg groups. MIR injury was induced by occlusion of superior mesenteric artery for 30 minutes followed by 120 minutes of reperfusion. Samples were utilized for assessment of epithelial survival and villous height. Immunohistochemistry study revealed intestinal expression of TNF- $\alpha$  and HIF-1- $\alpha$ . Gene expression of NF- $\kappa$ B/TLR4/TNF- $\alpha$ /IL-6 was measured using RTPCR. Also, protein levels of inflammatory cytokines in serum and intestine were assessed by ELISA method. Results: Histopathological study demonstrated that pretreatment with Albendazole could ameliorate decline in villous height and epithelial survival following MIR injury. Also, systemic inflammation was suppressed after administration of Albendazole. Analysis of possible participating inflammatory pathway could demonstrate that intestinal expression of NF- $\kappa$ B/TLR4/TNF- $\alpha$ /IL-6 is significantly attenuated in treated groups. Eventually, IHC study illustrated concordant decline in mesenteric expression of HIF-1- $\alpha$ /TNF- $\alpha$ . Conclusion: Single dose pretreatment with Albendazole could ameliorate inflammatory response and enhance ischemia threshold following induction of MIR injury. Still, more studies would clarify existing causality in this phenomenon.

**Keywords :** albendazole, ischemia reperfusion injury, inflammation, mesenteric ischemia

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