Journal of Innovations in Pharmaceutical and Biological Sciences (JIPBS)
ISSN: 2349-2759
Available online at www.jipbs.com

Research article

Possible protective role of verapamil on ischemia/reperfusion induced changes in the jejunal mucosa of adult male albino rat: Histological and biochemical study

Dalia A Mohamed*[1], Amani A Almallah[2]

[1]*Department of Histology and cell biology, .College of medicine, Zagazig university, Egypt.*
[2]*Department of anatomy and embryology, College of medicine, Suez Canal University, Egypt.*

Key words: intestine, Verapamil, I/R, oxidative stress.

***Corresponding Author: Dalia A Mohamed,** Anatomy and Histology Department, Qassim University, Saudi Arabia and Histology and Cell Biology Department, Faculty of Medicine, Zagazig University, Zagazig 44519, Egypt.

Abstract

Background: The small intestine is extremely sensitive to ischemia-reperfusion (I/R) injury and a range of microcirculatory disturbances which contribute to tissue damage. Previous studies have shown that verapamil plays an important physiological role in the microvascular environment. This study aimed to evaluate the protective effects of verapamil in ischemia/reperfusion (I/R) – induced mucosal injury in the jejunum. Fifty adult albino rats were divided into five groups: **group I** (Control untreated); **group II** (Sham-operated); **group III** (sham-operated +verapamil); **group IV** (Ischemia/Reperfusion) and **Group V** (I/R + verapamil). At the end of the reperfusion period the jejunum was extracted and prepared for histological and immunohistochemical examination. Distribution of myeloperoxidase (MPO) stained cells and the levels of malondialdehyde (MDA), superoxide dismutase (SOD) and glutathione (GSH,) were also determined in all dissected tissues. Morphometric study was also done and statistical results were analyzed. Intestinal IR caused severe intestinal mucosa injury especialy epithelial cell damage. Group (I/R) revealed villus structural alterations, cellular infiltration and hemorrhage. MPO and goblet cells showed a significant increase in the number with elevation of oxidative stress marker. Co-administration of verapamil ameliorated these histological changes and significantly decreased mucosal damages compared to group I/R.
Conclusion: Verapamil can protect against intestinal I/R probably through inhibition of oxidative stress and neutrophil infiltration. So it can be used safely in mesenteric occlusive diseases, since it induces improvement of circulation and relief of concomitant structural changes.