Abstract

Non-steroidal anti-inflammatory drugs (NSAIDs) are known to cause gastrointestinal damage. New anti-inflammatory drugs have been developed in an attempt to improve their gastrointestinal side effect profile which however failed to do so. Therefore, the objective of the present study was to compare the effect of three different NSAIDs, aspirin, nimesulide and celecoxib on the intestinal brush border membrane (BBM) marker enzymes and correlate these alterations to the histoarchitecture of the intestine using electron microscopic study. Female Wistar rats were divided into four different groups viz: Group I (Control), Group II (aspirin treated), Group III (nimesulide treated) and Group IV (celecoxib treated). The Group II, III and IV received the corresponding drugs dissolved in water orally at a dose of 40 mg/kg body weight, while the control received the vehicle only. After 28 days, all the treatment groups demonstrated significant alterations in the activities of intestinal disaccharide hydrolases and alkaline phosphatase in both the crude homogenates and BBM preparations as well. The histopathological observations also showed considerable changes in the intestinal mucosa. It was suggested that NSAIDs like aspirin, nimesulide and celecoxib pose intestinal side effects due to initial changes in the enzymatic composition of the intestinal apical membranes. It was further concluded that newly discovered NSAIDs such as celecoxib has better safety profiles but studies are still required to comment decisively on the suitability of various NSAIDs depending upon their cyclooxygenase enzyme specificity.

Keywords

Non-steroidal anti-inflammatory drugs, Membrane disaccharidases, Intestinal brush border membrane.