Oxidative stress and antioxidant capacity in TNBS-induced colitis

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Oxidative stress is defined as an imbalance between generation of reactive oxygen species (ROS) and decreased antioxidant defense systems (ADS). There is recruitment of many inflammatory cells in inflammatory bowel disease that produces ROS. Passion fruit peel (PFP) flour is rich in fiber and in polyphenols that can improve antioxidants defense system by many ways. In this study we determined the levels of Malondialdehyde (MDA), Glutathione (GSH), Glutathione peroxidase (GSH-Px) and reductase (GSH-R) in rats with colitis induced by 2,4,6-trinitrobenzene sulfonic acid. Twenty-four Wistar rats were divided in two groups AIN-93M and AIN-93M+PFP. Each group was divided into two experimental subgroups: Colitis and Saline. Colitis was diagnosed macroscopically and the detection of oxidative tissue damage by measuring MDA and ADS was evaluated by GSH, GSH-Px and GSH-R in colon samples. ANOVA and Tukey tests were used to compare statistics difference with significance at 5% (p<0.05). There was no statistically difference between Colitis and Saline groups in view of colon tissue levels of antioxidants enzymes. However, AIN-93M+PFP showed two times more GSH-Px than AIN-93M (Saline groups). The group fed diet AIN-93M+PFP showed decreased in MDA content in Saline (0.29 ± 0.09 µM /mg tissue) and Colitis (0.40 ± 0.12 µM /mg tissue) group than AIN-93M (0.88 ±0.21 and 2.15 ±1.22 µM /mg tissue, respectively). However, we did not observe differences in macroscopic score among the groups. The consumption of PFP decreased lipid peroxidation especially by scavenging free radicals. Our result reveals that PFP has antioxidant capacity despite oxidative stress in colitis.

Key-words: Oxidative stress, passion fruit peel, colitis.