

Poster 16

Evaluating the impact of high sugar diet on juvenile rats: a histomorphological study on gut epithelial barrier

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Abstract

Background: Intestinal barrier is an important structure that defends and maintains the homeostasis of the host. [1-3]. It is highly influenced by food due to the interaction between nutrients and gut microbiota [2]. A diet rich in sugar can disrupt gut homeostasis, leading to a dysfunctional barrier and causing chronic diseases [3]. The enterochromaffin cells (ECs) are dispersed throughout the intestine wall, playing a role in the regulations of barrier function, responding to changes in intestinal microenvironment [1]. **Objective:** This study aims to evaluate the effect of a high-sugar diet on intestinal morphology, specifically on the histology and the expression of ECs. **Methods:** Male Wistar rats aged between 21-23 postnatal days were divided into two groups: a control group that drank water, and a high-sugar (HS) diet group that drank a 30% sucrose solution. All animals were fed standard rat chow. Tissue samples from the duodenum, jejunum, and colon, were cut 5 µm thick and stained with Hematoxylin-eosin (HE) to evaluate the integrity of the structure of the intestinal walls, and with Fontana-Masson (FM) staining the identification of ECs. **Results:** Qualitative results were obtained from tissue sections of control and HS-diet groups. Regarding the duodenum and jejunum, there is an accumulation of lipid droplets in the mucosa of the rats with an HS diet. There was also infiltration of inflammatory cells in the HS-diet group [3]. In the colon, the HS-diet group showed a reduction in the size of the external muscular layer and fewer Lieberkühn glands, aligned with previous study [4]. The ECs were found dispersed in the colon tissue of HS-diet group, while they were less stained in the control group. **Conclusions:** This study showed that high sugar liquid diet induced some morphological alterations in the small intestine and the colon, but no differences were observed in the ECs in colon.

Keywords: high sugar diet; histological morphology; enterochromaffin cells; intestinal epithelial barrier

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