

## ***Hymenolepis diminuta* – caused inflammation via the increased expression and activity of COX-1 and COX-2 in the rat jejunum and colon**

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*Hymenolepis diminuta* is a cosmopolitan tapeworm of rodents (mainly rats and mice) and humans, used as a model for morphological and physiological studies on tapeworms. The aim of this study was to determine whether *H. diminuta* may affect the expression and activity of the enzymes cyclooxygenase 1 (COX-1) and cyclooxygenase 2 (COX-2). Therefore, we also measured the concentrations of their main products – prostaglandins (PGE<sub>2</sub>) and thromboxane B<sub>2</sub> (TXB<sub>2</sub>). This study was conducted on the same experimental model as in our previous studies in which we had observed changes in the transepithelial ion transport, tight junctions and in the indicators of oxidative stress, in both small and large intestines of rats infected with *H. diminuta*. In this study, we investigated not only the site of immediate presence of the tapeworm (jejunum), but also a distant site (colon). *Hymenolepis diminuta* infection related inflammation is associated with the increased expression and activation of cyclooxygenase (COX). This enzyme is responsible for the synthesis of PGE<sub>2</sub> and TXB<sub>2</sub>, local hormones contributing to the enhanced inflammatory reaction in the jejunum and colon in the infected rats. The increased COX expression and activity is probably due to the increased level of free radicals and the weakening of the host's antioxidant defense induced by the presence of the parasite. Our immunohistochemical research showed that *H. diminuta* infection affected not only the intensity of COX immunoreaction but also the enzyme protein localization within intestinal epithelial cells – from diffuse whole cytoplasmic to apical/basal region of cells, or even to nuclear localization.