



Oxidative stress as a key stage in the initiation of harmful effects in experimental modeling of low-intensity electromagnetic radiation

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Abstract – It is recognized that prostaglandins and thromboxanes, which are formed from arachidonic acid under the action of cyclooxygenase, play a crucial role in numerous biological processes, including the regulation of immune function and the integrity of the gastrointestinal tract. There are two isoforms of cyclooxygenase, which differ in their expression patterns. The experimental study was devoted to determining the activity of cyclooxygenase isoforms in intestinal tissues when modeling ulcerative colitis. Ulcerative colitis was induced by intra-rectal administration of DNBS.

According to the terms of the study, the animals were divided into three groups: the first control group consisted of intact animals that were injected with 0.9% saline solution; rats in the second control group were injected with a 50% solution of ethyl alcohol; rats in the experimental group were injected with DNBS in a 50% alcohol solution. The activity of cyclooxygenase-1 (COX-1) and cyclooxygenase-2 (COX-2) in colon homogenates was determined by immunoenzymatic method. In an experimental study of COX-1 and COX-2 activity in colon homogenates, a significant decrease in these isoenzyme forms was found in both the experimental group of animals and the second control group compared to the first control group.

Scientific sources indicate that there are two directions of COX-2 expression: induction by inflammatory cytokines and constitutive expression of COX-2 in the intestine. Thus, insufficient or inhibited COX-2 expression in intestinal tissues is associated with the severity of the inflammatory process, indicating the important role of cyclooxygenases in maintaining intestinal integrity

Keywords – cyclooxygenase, oxidative stress, gastrointestinal tract, laboratory rats, medicine.