ABSTRACT

11β-hydroxysteroid dehydrogenase (11βHSD) participates in prereceptor metabolism of glucocorticoids by conversion of their active forms (cortisol or corticosterone) to inactive forms (cortisone or 11-dehydrocorticosterone), thereby regulating concentration and activity of glucocorticoids in organism. 11βHSD type 1 (11βHSD1) activates glucocorticoids from their biologically inactive keto-forms, whereas the role of 11βHSD type 2 (11βHSD2) is their biological reinactivation. Previous *in vivo* studies showed that mRNA expression and enzyme activity of 11βHSD1 or 2 can be modified by influence of these cytokines, for example IL-1β and TNF-α. The aim of this study was to determine whether these cytokines play a role in regulation of 11βHSD expression in distal colon organ cultures and whether the changes of 11βHSD2 expression are induced by a direct effect of cytokines on epithelial cells. Total RNA was isolated from all samples and RNA was transformed to cDNA by reverse transcription. Subsequently mRNA of 11βHSD1 or 2 and the given housekeeping gene was measured by Q-PCR. Incubation of distal colon organ cultures with TNF-α (10 ng/ml; 48 hours) caused significant increase of 11βHSD1 expression, but no influence on 11βHSD2 expression was observed. In contrast, the expression of 11βHSD2 but not 11βHSD1 was significantly upregulated in the presence of IL-1β (10 ng/ml; 48 hours). To examine whether the changes of 11βHSD2 expression are caused by a direct effect of cytokines on epithelial cells or whether this effect is induced by an influence on other cells of colonic mucosa, an experiment with epithelial cell line HT-29 was designed. Incubation of HT-29 neither with IL-1β (10 ng/ml and 100 ng/ml) nor with TNF-α (25 ng/ml and 250 ng/ml) induced any changes of 11βHDS2 expression.

(In Czech)