

**Expression of p-Atf-2, p-Creb, and p-c-Myc in rat colon transversum after whole body  $\gamma$ -irradiation**J. Pejchal<sup>a</sup>, J. Osterreicher<sup>a</sup>, Z. Vilasova<sup>a</sup>, A. Tichy<sup>b</sup>, J. Vavrova<sup>a</sup> and L. Mervartova<sup>a</sup><sup>a</sup>*Faculty of Military Health Sciences, Trebesska 1575, 50001 Hradec Kralove, Czech Republic;* <sup>b</sup>*Faculty of Medicine, Charles University, Simkova 870, 50038 Hradec Kralove, Czech Republic**jaroslav.pejchal@seznam.cz*

Background: The purpose of our study is to examine the expression of phospho-Atf-2 (thr69/71) (p-Atf-2), phospho-Creb (ser133) (p-Creb) and phospho-c-Myc (thr58/ser62) (p-c-Myc), the activated forms of transcription factors and the targets of ERK, SAPK/JNK and p38MAP kinase pathways in irradiated colon transversum in rats and to assess its contribution to pathogenesis and biodosimetry. Materials and methods: Male Wistar rats were randomly divided to 28 groups and irradiated with whole-body gamma-radiation of 0, 0.25, 0.5, 0.75, 1, 2, 3, 4, 5, 6, 7, 8, 9, and 10 Gy. Samples were taken 4 and 24 hours after the irradiation, immunohistochemically stained. P- Atf -2, p-Creb, and p-c-Myc expression was measured. Results: We measured increased cytoplasmatic p-Atf-2 expression 4 hours after irradiation by 0.25-1, 10 Gy and 24 hours after irradiation by 0.5-1, 10 Gy. Increased cytoplasmatic p-Creb expression was found 4 hours after irradiation by 0.25-1, 9, 10 Gy and 24 hours after irradiation by 0.25-1, 4, 10 Gy. Increased p-c-Myc cytoplasmatic expression was found 4 hours after irradiation by 0.25, 0.75, 4, 5 Gy and 24 hours after irradiation by 0.75, 1, 10 Gy. Nuclear p-Atf-2, p-Creb, and p-c-Myc expressions were similar to their cytoplasmatic expressions. Conclusion: This study reveals that in the in vivo condition there is a chronological and a dose-dependent order of p-Atf-2, p-Creb and p-c-Myc activation. The activation of p-Atf-2, p-Creb and p-c-Myc shows transient pattern at low doses and rather persistent pattern at high doses. The detection of p-Atf-2 and p-Creb might be considered as a perspective biodosimetric tool for irradiated enterocytes in vivo. The use of p-c-Myc appears to be controversial due to the ambivalent expression values.