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Radiosensitivity of peripheral blood B cells in pigs

Z. Sinkorova, J. Sinkora, L. Zarybnicka, Z. Vilasova, J. Pejchal

<https://doi.org/10.17221/59/2009-VETMED>

Citation: Sinkorova Z., Sinkora J., Zarybnicka L., Vilasova Z., Pejchal J. (2009): Radiosensitivity of peripheral blood B cells in pigs. Veterinarni Medicina, 54: 223-235.

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: Swine are here introduced to biodosimetry in an attempt to develop a large animal model allowing for comparison of *in vitro* experiments with the *in vivo* processes occurring after exposure to gamma radiation. This work investigates the radiosensitivity of the B cell compartment in peripheral blood. Four-week-old piglets were irradiated using the whole body protocol or full blood samples were irradiated *in vitro* in the dose range of 0–10 Gy. Relative radioresistance of B cell subpopulations and subsets was determined by measuring their relative numbers in leukocyte preparations at selected time intervals after irradiation using two color immunophenotyping and flow cytometry. Porcine B cells represent the most radiosensitive lymphocyte population in peripheral blood. Among B cell subpopulations and subsets investigated, the CD21+SWC7+ and CD21+CD1+ cells are highly radiosensitive and possess biodosimetric potential, at least in the range of low doses. Differences between cultures irradiated *in vitro* and lymphocyte dynamics in peripheral blood of irradiated animals clearly document the limits of *in vitro* data extrapolation in biodosimetry. We have shown that pigs can successfully be used in radiobiology and experimental biodosimetry due mainly to their availability, size and a relatively broad spectrum of available immunoreagents for lymphocyte classification.

Keywords:

dosimetry-biological; B lymphocytes; radiosensitivity; pig

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Impact factor (WoS)

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SJR (SCOPUS)

2017: **0.280 – Q2** (Veterina (miscellaneous))



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