



Assessing radiobiological effects of diagnostic level doses of ionizing radiation on zebrafish using comet assay

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This paper relates with the application of zebrafish – *Danio rerio* – to the study of radiobiological effects of medical diagnostic level – low doses – of ionizing radiation.

In recent years, the use of zebrafish has grown considerably, pointing more and more as a very interesting model in biomedical research, essentially because of the level of homology shared with the human genome, complemented by an easy and reasonably affordable practical side.

This work used a population of circa 300 animals, divided in four groups of 75, which were externally irradiated with three distinct dose protocols: 100, 500 and 1.000 mGy. The postures of the irradiated fish were collected and groups of adult animals were sacrificed in three different moments: 1, 4 and 7 days after the irradiation. DNA damage in adults and in larvae were studied using comet assay. The results related to damages were processed and presented in terms of percentual of DNA in tail, allowing an approximation to the relative number of DNA breaks induced by the radiation exposure.

About the relationship between percentage of DNA in tail and irradiated dose at 1 day after the irradiation, there was significant difference in DNA damage between the three irradiated groups (35,0% at 100mGy, 37,7% at 500mGy and 43,4% at 1.000mGy) and the control group (24,3%). Results obtained suggest that females and males present distinct radiosensitivity, with a peak effect at the first time points and higher doses. Nevertheless, results also demonstrated that damages tend to recover along the time.

Results point to a significant relation between dose of irradiation and acute DNA damages.



Referencial: SC HESD-090



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