

Study of radiobiological effects of low doses of ionizing radiation using comet assay on zebrafish model

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Abstract:

Present paper relates with the analysis of radiobiological effects, in a context of ionizing radiation low doses, using an advanced biological model, the zebrafish - *Danio rerio* - and comet assay based analytical methodology. The use of zebrafish has grown considerably in recent years, assuming more and more is role as a very promising model in biomedical research, both because of the high level of homology shared with the human genome, and an assumedly easy - and reasonably priced - practical side.

To obtain the data here mentioned, it has been used a population of circa 300 animals, divided in four groups of 75 each, all having been 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 killed 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.

Concerning 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 noticed damages tend to recover along the time.



Obtained results seem to point to a significant relation between dose of irradiation and acute DNA damages.

Foi decidido que não será apresentada a versão integral deste documento.

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