

EVALUATION OF THE RADIOPROTECTOR EFFECT OF COMPOUNDS

TECHNOLOGY DESCRIPTION

Researchers from the Health Research Institute Hospital La Fe have optimized an evaluation trial of the radioprotective effect through *in vitro*, *ex vivo* and *in vivo* studies. The trial would be the first step to initiate biomedical studies and to know if a molecule/compound, or a mixture of them is radioprotective.

These tests are based on the irradiation of peripheral blood, human skin and experimental animals at different doses of ionizing radiation. Different doses of the substance(s) that will be studied later, will have been previously added, and subsequent cytogenetic, histological, and molecular analysis will be carried out to characterize the reduction of the radiation induced damage in the studied biological systems due to the protection offered by to-be-studied compound/s. The irradiation of the blood samples is done according to the protocol established by the International Atomic Energy Agency (IAEA) and the analyzed biomarker is the dicentric chromosomes. The reason of choosing this biomarker among the set of those accepted by the IAEA is that the dicentric chromosomes are specifically induced by radiation and are the gold-standard biomarker for biological dosimetry studies. These studies estimate the dose of ionizing radiation absorbed from dose-effect curves constructed with different biomarkers. The research team from the IIS La Fe has a dose-effect curve elaborated by the analysis of dicentric chromosomes since it is considered the biomarker of choice in biological dosimetry.

The research team can carry out radioprotection studies *ex vivo* with human skin and/or *in vivo*, using experimental animals, through which it is possible to evaluate the radioprotective efficacy of substances and/or compounds in the form of topical and oral products. The group has already established a model of radiodermatitis in rats.

SECTORS OF BUSINESS APPLICATION

Designing oral and/or topical agents capable of protecting against ionizing radiation.

TECHNICAL ADVANTAGES AND BUSINESS BENEFITS

- Economic procedure that allows obtaining results in just a few weeks.
- Test implemented according to the protocol of the International Atomic Energy Agency.
- The results are the first step to determine the efficacy of radioprotective agents intended for oral or topical use.
- The model allows to evaluate the radioprotective efficacy of topical and oral products from a cellular, dermatological and clinical point of view with the radioprotection study *in vivo* with experimental animals.

PARTNER SEARCH

The IIS La Fe seeks national companies, international companies and public entities that have a radiology service where interventional radiology and/or radiotherapy services are used.

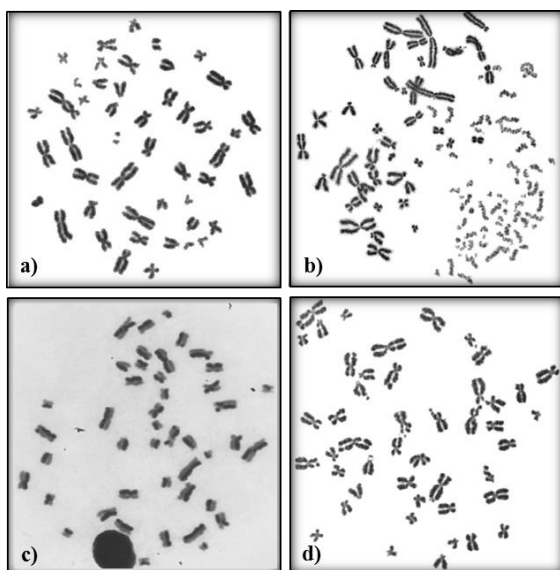
Pharmaceutical and/or cosmetic companies that want to develop products for the market; nuclear power plants; armed forces (army/military); aeronautical services (astronauts), etc.

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IMÁGES



In the *in vivo* results, the irradiation increases the dermatitis compared to the use of radioprotectors for topical use.



Division cells in the metaphase phase obtained with different cytogenetic techniques for the study of radioprotective activity: a) dicentric assay; b) chromosome premature condensation technique (PCC); c) sister chromatid exchange technique (SCE); d) G2 test.

CONTACT INFORMATION

Responsible scientist: Alegría Montoro, PhD

Tlf: 675633313

Email: montoro_ale@gva.es