

In vitro biocompatibility of a new hydrogel with Crocin, powerful antioxidant found in *Crocus Sativus L.* flowers.

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Recently, attention has been paid to the identification of natural antioxidants from the petals of *Crocus S.* flowers that are normally considered waste[1]. The antioxidant activities are mainly attributed to carotenoid compounds, like crocin. Scientific evidences demonstrate that this kind of compounds are among the most important natural plant sources of antioxidant activity in the human diet, protecting the body against damages caused by reactive oxygen species (ROS).

This antioxidant was extracted using methanol and ethanol. In this experiment, it was used a new hydrogel consisting of three polymers - Polyvinyl pyrrolidone (PVP), Agar and Polyethylene glycol (PEG) – and Crocin, mixed, reticulated and then sterilized by gamma irradiation at 25 kGy. For the in vitro experimental protocol, it was used a primary culture of fibroblasts taken from the subcutaneous tissue of a newborn mice, seeding the cells on a little square (1cm² area) of both kinds of hydrogel. As the ISO protocol prescribes, the experiments were repeated 3 times for each kind of hydrogel, stopping the culture at the 3rd, 7th and 14th day after the seeding. For all steps, 3 Petri dishes were used as controls without biomaterials. At fixed deadline, all Petri dishes were stained, using the Wright method for cell counting and morphological evaluations. The microscopic analysis revealed the complete biocompatibility of the hydrogel. The Petri dishes with this kind of new hydrogel has an overproduction of collagen from the fibroblasts. The presence of this natural important compound in saffron petals, now offers new possibilities for the best use of the whole flower. This study is still in progress.

References

- [1] Sayed Amir Hossein Goli et al. (2012) Phenolic Compounds and Antioxidant Activity from Saffron (*Crocus sativus L.*) Petal - *Journal of Agricultural Science* 4(10): 175-181.

Key words

Hydrogel, Crocin, *Crocus Sativus*, Antioxidants.