RESVERATROL DELIVERY FROM POLYMERIC HYDROGEL SYSTEM

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Resveratrol (3, 4', 5-trihydroxystilbene) is a polyphenolic phytoalexin produced by a wide variety of plants. Topically applied resveratrol has been demonstrated to shown benefits against skin disorders, such as antiproliferative and chemopreventive properties against skin carcinogenesis [1]. This unique combination of properties makes interesting the resveratrol immobilization in hydrogel membranes in order to obtain a resveratrol delivery system to be used in topical applications.
In this study two kinds of matrices composed of PVP K90, polyethylene glycol (PEG) and agar **(PVP/PEG**) or PVPK90 and glycerol **(PVP/GLY)** irradiated in ^{60}Co gamma ray source at 20 kGy dose were analyzed. The devices (**PVP/PEG/RES** and **PVP/GLY/RES**) were obtained by resveratrol immobilization in polymeric matrices carried out in a two steps process, that is, after irradiation.
The properties of matrices were analyzed by swelling, gel fraction and *in vitro* test of biocompatibility. The release degree of resveratrol was performed immersing the devices in a phosphate buffered saline solution (PBS) pH 5 during 24 hours. The samples were analyzed by High Performance Liquid Chromatography (HPLC).
The matrices showed a high crosslinking degree, capacity of swelling and no cytotoxic effect in the cytotoxicity assay indicating that the PVP hydrogel formulation was appropriate to immobilization of resveratrol. The kinetics of release (Fig. 2) showed that the devices were able to release resveratrol continuously.

Table 1: Results of gel fraction and swelling

Samples	Gel fraction (%)	Swelling (%)
PVP/PEG	88 ± 0.1	2049 ± 40
PVP/GLY	81 ± 1.1	2307 ± 133

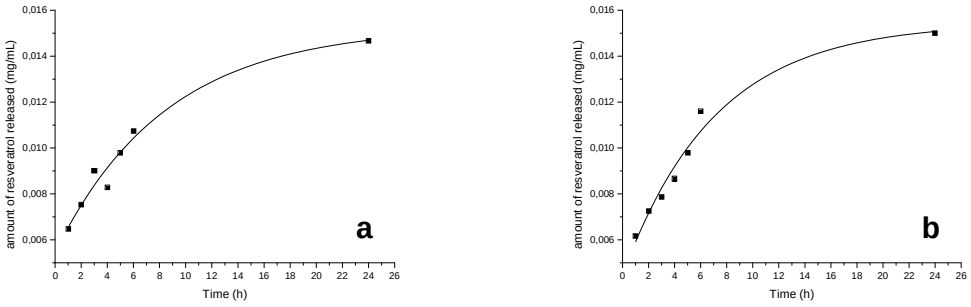

Figure 1: Amount of resveratrol release from polymeric hydrogels (a) PVP/PEG/RES and (b) PVP/GLY/RES.

References

[1] HUNG, C. F., LIN, Y. K., HUANG, Z. R., FANG, J. Y. , Biol. Pharm. Bull. 31(2008), 955—962.