In vitro effects of 100 mJ/cm² UVB radiation on some normal skin cells (Note I)

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Abstract

Background. The melanocytes and keratinocytes form a close association in the skin named melano-epidermal unit. This is capable of secreting a wide range of signaling molecules in response to different stimuli, such as stressors or ultraviolet radiation (UVR). Potential targets for these secretor products are keratinocytes, fibroblasts and mast cells; therefore, melanocytes may act as regulatory cells, with a role in the epidermal homeostasis. Grapes, particularly red, contain a large diversity of polyphenolic compounds exhibiting antioxidants properties; they might offer protection against UV radiation in skin cells.

Aims. The aim of our study was to evaluate the in vitro effects of UVR – B type induced oxidative stress on cellular viability of melanocytes and keratinocytes and to evaluate the protective antioxidant role of a grape seed extract (GSE).

Methods. Experiments were conducted on the following groups: individual cultures of keratinocytes, individual cultures of melanocytes, keratinocyte-melanocyte co-cultures. For each of these the following subgroups were made: control (irradiated, unprotected by BMR); exposed to UVB (irradiated); protected by BMR and then exposed to UVB. The radiation dose used was 100 mJ/cm^2/cell culture.

Results. UVB radiation induced a prooxidative status, materialized in cellular death. The most sensitive were individually cultured keratinocytes, followed by cells from co-cultures. BMR is a natural antioxidant factor for the immediate protection of cultured cells viability against oxidative stress generated by exposure to UVB radiation.

Conclusions. BMR extract exerted an effective antioxidant protection on individually cultured keratinocytes and on cell co-cultures.

Keywords: cell cultures, oxidative stress, cell viability, antioxidants.