IJAE
Vol. 123, n. 1 (Supplement): 134, 2018
ITALIAN JOURNAL OF ANATOMY AND EMBRYOLOGY

Protective effect by Vitis vinifera L. extract after UVA irradiation in human endothelial cells EAhy.926: genotoxical and morphological analysis

Laura Marabini[1], Giulia Lombardo[2], Laura Cornaghi[2], Stefano Piazza[3], Marina Marinovichv[3] and Elena Donetti[2]

[1] Università degli Studi di Milano, Department of Environmental Science and Policy, Milan, Kenya
[2] Università degli Studi di Milano, Department of Biomedical Science for Health, Milan, Italia
[3] Università degli Studi di Milano, Department of Pharmacological and Biomolecular Sciences, Milan, Italia

Dermal microcirculation can be affected by the ultraviolet (UV) component of solar radiation (wavelength 100 - 400 nm). In particular UVA is the most penetrating radiation (320-400 nm) and UVA exposure can induce several types of DNA damage in skin cells through an oxidative mechanism. The generated reactive species (ROS) lead to oxidative base modifications with single and/or double strand breaks (SSB and DSB). Flavonoids (flavonols and anthocyanins) can exert a ROS scavenging action or counteract ROS damage. For this reason, we aimed at investigating the UVA effects in an endothelial cell line, EAhy.926, as a first approach to mimic dermal microcirculation in order to preliminary elucidate the possible UVA effect. The aims of our study were i) to characterize UVA damage from morphological and genotoxic point of view and ii) to evaluate the protective action of Vitis vinifera L. water extract from dried leaves after UVA irradiation. The treatment with the extract of Vitis Vinifera L. (100 μg/ml, 1h in serum-free media), particularly rich in flavonoids, was followed by the exposure to UVA (2.5-5-10-20 J/cm2) radiation in PBS. Pre-treatment with the extract before UVA exposure restored almost completely the subcellular organization. On the whole, these data suggest that Vitis Vinifera L. extract can revert UVA damage not only by acting as a scavenger, as evidenced by the reduced production of ROS, but probably by activating the cellular detoxifying enzymatic system antioxidant. The next step will be the use of primary dermal endothelial cells to strictly reproduce the physiological environment.

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