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Anti-Tumor Activity Of The Extra-Virgin Olive Oil Polyphenol Oleacein In Human Melanoma Cells Through The Modulation Of Mirna Expression

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Abstract

Extra-virgin olive oil (EVOO) polyphenols contribute to Mediterranean diet health-promoting properties. One of the most abundant secoiridoid present in EVOO, Oleacein (OA), demonstrated anticancer activity against several tumors. Nevertheless, its role against melanoma has not still investigated. This study aimed at determining in vitro the anti-melanoma activity of OA and the relative mechanism of action. OA induced cell growth inhibition in 501Mel melanoma cells with an IC50 in the low micromolar range of concentrations. Moreover, an OA concentration approximating the IC50 induced G1/S phase arrest, DNA fragmentation, and down-regulation of genes encoding anti-apoptotic (BCL2 and MCL1) and pro-proliferative (c-KIT, K-RAS, PIK3R3, mTOR) proteins, while increased transcription levels of the pro-apoptotic protein BAX. Concordantly, OA increased the levels of miR-193a-3p (targeting MCL1, c-KIT and K-RAS), miR-193a-5p (targeting PIK3R3 and mTOR), miR-34a-5p (targeting BCL2 and c-KIT) and miR-16-5p (targeting BCL2, MCL1, K-RAS and mTOR), while decreased miR-214-3p (targeting BAX). These modulatory effects might contribute to the inhibition of 501Mel melanoma cell growth observed after treatment with an olive leaves- derived formulation rich in OA, with potential application against in situ cutaneous melanoma. Altogether, these results demonstrate the ability of OA to contrast the proliferation of cutaneous melanoma cells through the transcriptional modulation of relevant genes and microRNAs, confirming the anticancer potential of EVOO and suggesting OA as a chemopreventive agent for cancer disease therapy.

Biography:

Sara Carpi has completed her Ph.D. in Medical Pathophysiology and Pharmacology in 2015. During her post-doc fellowship, she awarded with research fellowships of Italian Pharmacology Society and Merck & Co. She spent a period of study in the ImmunoViroTherpay Lab, Department of Pharmacy of the University of Helsinki (Finland), supported by an EMBO fellowship. She is a researcher in Pharmacology at the Department of Pharmacy, University of Pisa (Italy) from 2017. Her current research is focused on non-coding RNA as mediators of the activity of natural compounds.

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