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Pro-senescent effects of hyper-harmonized hydroxylated fullerene water complex in melanoma

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Antioxidant and anticancer properties of fullerene C_{60} and especially of its polyhydroxylated, water soluble derivatives (fullerols) make them appealing for biomedical applications. In order to analyse antitumor effects of Hyper-Harmonized Hydroxylated Fullerene Water Complex (3HFWC)[1], second generation of fullerol, melanoma cells of different intracellular features and invasive potential (B16, B16-F10, A375) were treated with 3HFWC in various concentrations (0.19-100 μg/ml) for 24, 48 and 72h. Subsequently, syngeneic murine melanoma model was used (oral 3HFWC intake, 0.15 g/l). The most prominent effect of 3HFWC, both *in vitro* and *in vivo*[2], was induction of cell senescence, followed by decreased proliferative capacity and tumor growth inhibition. Senescent cells remained viable *in vitro*, but lost ability to divide and decreased metabolic activity, due to mitochondria alterations. Our findings demonstrate pro-senescence approach in antitumor therapy which is suggested to be less aggressive than the conventional strategies based on cancer cell killing, frequently followed by compensatory proliferation and subsequent tumor progression.

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