Time-dependent effect of tamoxifen on melanogenesis in normal human melanocytes

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Abstract

In medical literature, occasional case reports describe gray hair re-pigmentation in patients after administration of certain drugs, such as tamoxifen, supporting the possibility of reversing pigmentation loss associated with ageing. This work aimed to study, in vitro, the effect on melanin production in primary human melanocytes of tamoxifen, an antagonist of the estrogen receptor in breast tissue, and of its most bioactive derivative, 4-hydroxy-tamoxifen.

Adult normal human epidermal melanocytes (NHEM) were exposed to physiological concentrations of tamoxifen and 4-hydroxy-tamoxifen for 72 hours.

The results showed that tamoxifen and 4HO-tamoxifen treatments promoted melanin extrusion. The transcript levels of genes coding for premelanosome protein and melan-A, directly related to skin and hair pigmentation, showed an increased tendency upon tamoxifen and 4-hydroxy-tamoxifen treatment. Induction of catalase gene expression in NHEM points towards a promelanogenic effect mediated by reactive oxygen species.

According to the results, these compounds seem to act as melanogenesis stimulators at a molecular level. Our data suggests that SERMs might be a new tool for increasing melanogenesis and might be of great interest for topical formulations in cosmetic industry.