

# 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.