ABSTRACT BOOK ABSTRACTS



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PIGMENTATION

## NIACINAMIDE AND 12-HYDROXYSTEARIC ACID PREVENTS POLLUTION-INDUCED HYPERPIGMENTATION IN LIVING SKIN EQUIVALENTS

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Introduction: Environmental pollution has become a major concern for skin health and appearance. Epidemiological studies suggests air pollution exposure is associated with different skin problems, like premature aging, incidence of eczema as well as pigment spots. The detrimental effects of pollutants could have been mediated directly by pollutants like polycyclic aromatic hydrocarbons (PAHs) or indirectly through peroxidation of skin surface lipids. Actives which can mitigate the effects of pollutants or the oxidative stress caused by pollutants are desirable for better skin protection.

Objectives: The current study aimed to investigate the hyperpigmentatory effect of two pollutant surrogates, benzo (a) pyrene (BaP) and squalene monohydroperoxide (SQOOH) in a pigmented living skin equivalent (pLSE) model. The protective effects of two cosmetic ingredients, niacinamide (NAM) and 12-hydroxystearic acid (12-HSA) were evaluated in two stress models.

Materials & Methods: The pLSE model was pretreated with or without NAM and 12-HSA, in the presence or absence of two pollutant surrogates. At the end of treatment, model viability and lightness (L\*) were measured. Tissue structure, melanin deposition and the expression Pmel17 was evaluated using histology staining.

Results: It was found that BaP (7.6 ng/cm2) and SQOOH (30  $\mu$ g/cm2) significantly impacted the model viability and a decrease in  $\Delta$ L\* by approximately 10. Both NAM and 12-HSA effectively rescued model viability. At the same time, NAM significantly ameliorated BaP induced decrease of L\* while 12-HSA was more effective in the SQOOH model. Moreover, Fontana-Masson staining and Pmel17 expression confirmed that NAM and 12-HSA effectively decreased melanin deposition and pre-melanosome level in the BaP and SQOOH challenged model, respectively.

Conclusions: The current study demonstrates two pollutant surrogates, BaP and SQOOH, directly lead to skin pigmentation in vitro, while cosmetic ingredients NAM and 12-HSA are able to prevent pollution-induced hyperpigmentation in a pLSE model.





