

## Signal transduction and radiation response (142-166)

142 UV-melanogenesis in cultured normal human melanocytes may be associated with MAPK activation.

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We report here the responsiveness of normal human epidermal melanocytes (NHEM) derived from neonatal foreskin to the low dose UVA radiation in vitro, in terms of cell proliferation, melanogenesis, and responses of MAPK (mitogen activated protein kinases). The proliferation of NHEM was not affected by 2J/m<sup>2</sup> or 8J/m<sup>2</sup> of UVA irradiation, whereas the melanin contents in cells was increased by 2J/m<sup>2</sup> of UVA. Among MAPK, both phosphorylation and activation of extracellular signal-related kinase(ERK)1/2 was observed at 5 min after UVA irradiation. These results suggested that melanogenesis, but not proliferation, of NHEM was promoted by low dose of UVA radiation through the mechanisms involving activation of ERK.

143 Differential Activation of MAP kinases in Response to UV Radiation under Different Oxygen Tension

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To understand the role of oxygen in cellular responses to UV stress, we examined changes of proliferation, cloning efficiency, and mitogen activated protein kinase (MAPK) activation of the cells which were irradiated with UV and incubated in different oxygen tension. Without UV-irradiation, both proliferation and cloning efficiency of human embryonic cells (HE49) were enhanced by hypoxic condition (5% O<sub>2</sub>). Among MAPK, extracellular signal-related kinase (ERK) 1/2 was selectively phosphorylated and activated in response to hypoxia. After UV(254nm)-irradiation, higher cell survival was observed in hypoxic condition, associated with rapid phosphorylation and activation of ERK1/2. In contrast, activation of c-Jun N-terminal kinase (JNK) and a marked increase in cellular redox level by UV exposure were only observed in normoxic condition. These results suggested that oxygen stress may play an important part in selective activation of ERK and JNK in response to UV irradiation.