

Dermatology and Cosmetology

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Activation of p38, p21, and NRF-2 mediates decreased proliferation of human dental pulp stem cells cultured under 21% O₂**Marya El Alami**

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High rates of stem cell proliferation are important in regenerative medicine and in stem cell banking for clinical use. Ambient oxygen tensions (21% O₂) are normally used for in vitro culture, but physiological levels in vivo range between 3% and 6% O₂. We compared proliferation of human dental pulp stem cells (hDPSCs) cultured under 21% versus 3% O₂. The rate of hDPSC proliferation is significantly lower at 21% O₂ compared to physiological oxygen levels due to enhanced oxidative stress. Under 21% O₂, increased p38 phosphorylation led to activation of p21. Increased generation of reactive oxygen species and p21 led to activation of the NRF-2 signaling pathway. The upregulation

of NRF-2 antioxidant defense genes under 21% O₂ may interact with cell-cycle-related proteins involved in regulating cell proliferation. Activation of p38/p21/NRF-2 in hDPSCs cultured under ambient oxygen tension inhibits stem cell proliferation and upregulates NRF-2 antioxidant defenses.

Speaker Biography

Marya El Alami has completed her PhD at the age of 30 years from University of Valencia, Spain. She has 9 publications. She is a doctor of pharmacy and has a master on pharmacology. She speaks 5 languages.

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