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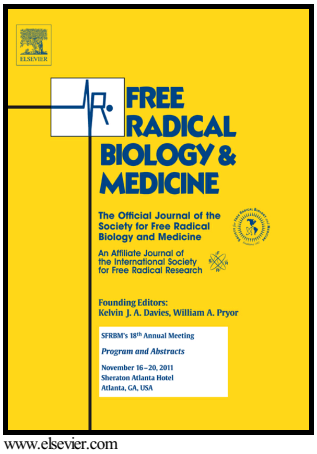

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Effect of humidity on photoinduced radicals in human hair

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ABSTRACT:

EPR spectroscopy was used to monitor formation of free radicals in human hair upon UV irradiation. While the EPR spectra of brown hair were dominated by melanin signal, those of white hair were keratin-derived. The decay of UV induced keratin radicals was enhanced at increased ambient humidity. We argue that at higher humidity the swollen hair provides a more liquid-like environment, and higher molecular mobility in this environment leads to faster radical reactions. This interpretation is consistent with the increased UV-triggered protein damage in hair at high humidity as demonstrated by the protein loss, MALDI-TOF and FT-IR data.

Graphical Abstract: