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Photobiomodulation therapy as a tool for the trichologist**Jacky van Driel-Nguene^{1,2,3}**¹Trichology Europe, Netherlands²Cystine Trichology Clinic, Netherlands³Association of Registered Trichologists, UK

The aim of this research-based study was to explore and review the usefulness and efficacy of photobiomodulation therapy/LLLT as an important tool to add to the trichologist's armamentarium. Photobiomodulation uses non-ionising light sources in the visible and invisible light spectra to improve tissue repair and reduce pain and inflammation in the body through an "optical window" of wavelengths between 600nm and 1070nm. Red light in the mid 600nm spectrum with a penetration depth less than 10mm is effective in treating superficial tissues (skin lesions) whilst light in the mid 800nm with a penetration depth up to 40mm, is effective for deeper structures such as tendons and bones. It appears that cytochrome c oxidase is the main photo-acceptor in cellular mitochondria and once stimulated by the

"optical window" wavelengths, there is an increase in electron transport, mitochondrial respiration and ATP production as well as in nitric oxide generation as it is dissociated from CCO. ROS species are also generated, and they act as signalling molecules for communication between mitochondria and their surroundings within the cell. LLLT has been used successfully in various areas of medicine including the treatment of traumatic brain injuries and wounds and injuries. Many studies show positive results in the treatment of hair loss of various aetiologies, skin conditions such as eczema and psoriasis, as well as pain and inflammation, which are all fundamental areas of interest to the Trichologist.

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