

## Activation mechanism of photoreceptors expressed in skin tissue

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The skin is the most external part of the body and is strongly influenced by light. Previous study, the effects of light on the skin have been evaluated mainly in terms of the biological effects of UV light, which has high energy, but the mechanisms of skin tissue response to visible light are still unclear. In this study, we investigated the light response of skin, a non-visual tissue, focusing on photoreceptors. Photoreceptor expression in skin tissue and skin keratinocytes was evaluated by RT-PCR, and multiple opsin receptor mRNA expressions were found in rat skin tissue and FRSK cells. The expression of enzymes related to the visual cycle, which is involved in the maintenance of photoreceptor activity, was also examined by RT-PCR. The results showed that all enzymes involved in the visual cycle were expressed in rat skin tissue. Retinal metabolites in FRSK cells after light exposure were detected by HPLC. The results showed that 11cis-retinal was converted to all trans-retinal by exposure to light. These results indicate that photoreceptors expressed on keratinocytes are modulated in their activity by exposure to light.