AESTHETIC AND COSMETIC DERMATOLOGY (LASERS SEPARATE CATEGORY)

LEVERAGE RETINOIDS TECHNOLOGY FOR PREVENTING ACCELERATED SKIN AGING

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Introduction: Skin aging results from both chronological aging and photoaging. Both of which are cumulative processes. The ability of retinoids to deliver significant skin benefits has been well documented. Retinyl propionate was evaluated for mitigating UV stress and psychological stress in vitro model.

Objective: Evaluate preventative effects of retinyl propionate in keratinocyte under UV damage and high cortisol stress conditions. Identify new technologies for enhancing retinyl propionate benefits by increasing retinoids cellular responses.

Materials and Methods:
1. Human epidermal keratinocytes were pre-treated with retinyl propionate and then exposed to UVB for simulating photoaging condition. Inflammatory cytokine production and transcriptomic changes were measured.
2. Human epidermal keratinocytes were treated with retinyl propionate in the presence of cortisol to simulate psychological stress conditions. Hyaluronic acid production and transcriptomic changes were measured.
3. The effect of RP on cellular bioenergetics in epidermal keratinocytes was analyzed.
4. An in vitro retinoid response reporter system was developed for screening new ingredients.

Results:
1. Retinyl propionate significantly reduced inflammatory responses in keratinocytes under UVB damage.
2. Retinyl propionate rescued hyaluronic acid production under cortisol stress conditions.
3. Retinyl propionate had a significant effect on increasing mitochondrial basal activity, maximal respiration, spare respiratory capacity, and ATP production. Additionally, RP increased glycolytic rates.
4. New technology can enhance retinoid response in reporter cells and deliver superior anti-

inflammatory benefits.

Conclusions: Retinyl propionate can abrogate cellular damage under UVB exposure and high cortisol stress condition in vitro. Additionally, RP had a positive impact on increasing cellular bioenergetics and reserve capacity under mitochondrial stress conditions. New technology holds the potential to deliver better skin benefits.