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Efficacy of a Multi-herb Extraction SGS for Skin Sensitivity and Barrier Function

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Introduction:

Sensitive skin is a clinical syndrome defined by the occurrence of unpleasant sensations (stinging, burning, pain, pruritus, and tingling sensations) in response to normal stimuli. The possible pathogenesis of sensitive skin includes disturbed barrier, neurogenic inflammation and related immune cells. The multi-herb extraction SGS, extracted from *Sophora flacescens* root, *Glycyrrhiza inflata* root and *Scutellaria baicalensis* root, was used to study its effect on skin inflammation and barrier function.

Materials & Methods:

➢ Anti-inflammation Test (*In vitro*):

HaCaT keratinocytes and Raw 264.7 macrophage were pre-treated with various of SGS for 4 h, then co-cultured with SLS or LPS for another 20 h. After incubation, the supernatant was collected to measure the content of cytokines, and the cell viability was detected by MTT assay.

3D reconstructed Episkin was treated by 1.25% SLS and various of SGS for 42 h, then the culture medium was collected to detect IL-1α and PGE-2 expression by ELISA, and the skin biopsy was stained using HE methods.

➢ Skin Barrier Function Measurement (*In vivo*):

14 healthy subjects were selected to apply 5% SLS and 0.5%, 1%, 2% SGS on forearms respectively at a dosage of 2 mg/cm^2 in a closed patch for 24 h. Taken off the patch, TM-300 and MX-18 probe were used to measure the trans-epidermal water loss (TEWL) value and erythema value in each area.

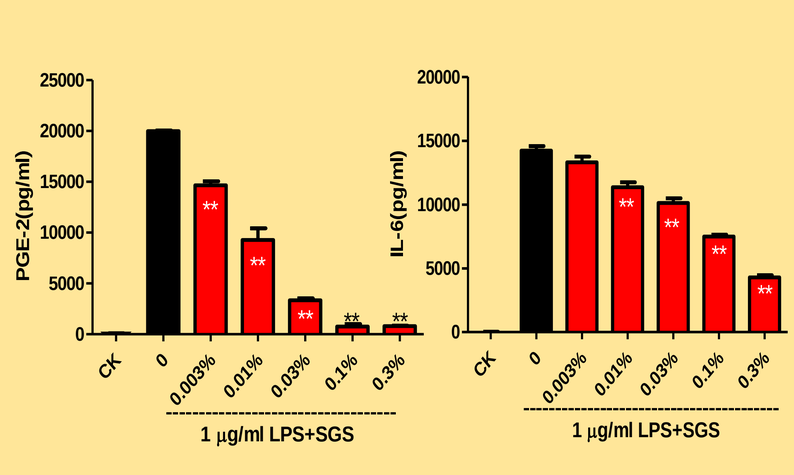
Results & Discussion:

SGS improved the viability of HaCaT cell

SGS significantly increased the cell viability when applied with SLS for 20 h, similar to dexamethasone (Dex 1 μM).

** P<0.01; * P<0.05 vs. SLS treatment group(0)

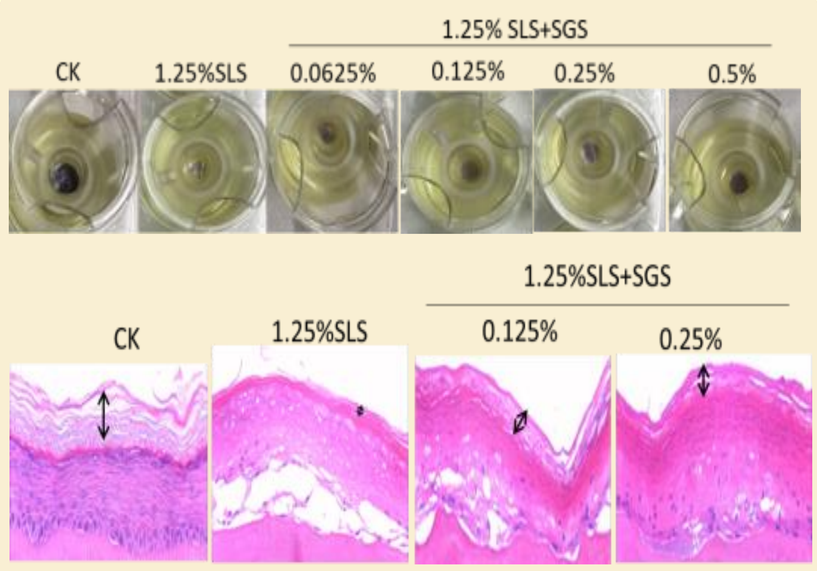
SGS inhibited the production of various cytokines



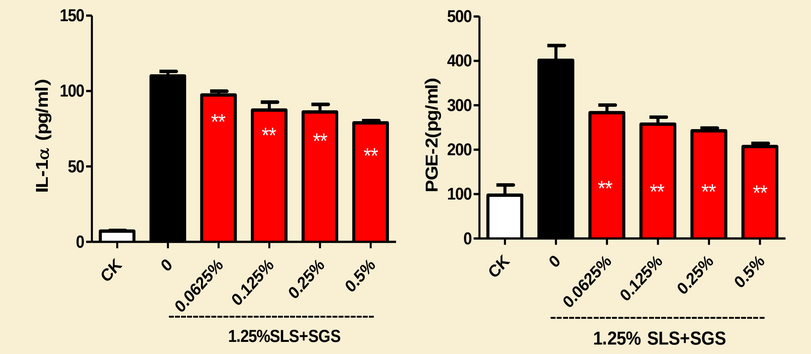
SGS inhibited the expression of PGE-2 and IL-6 when applied with LPS for 20 h on Raw 264.7 cells from 0.01% to 0.3% conc..

** P<0.01; * P<0.05 vs. SLS treatment group (0)

The efficacy of SGS on 3D Episkin model



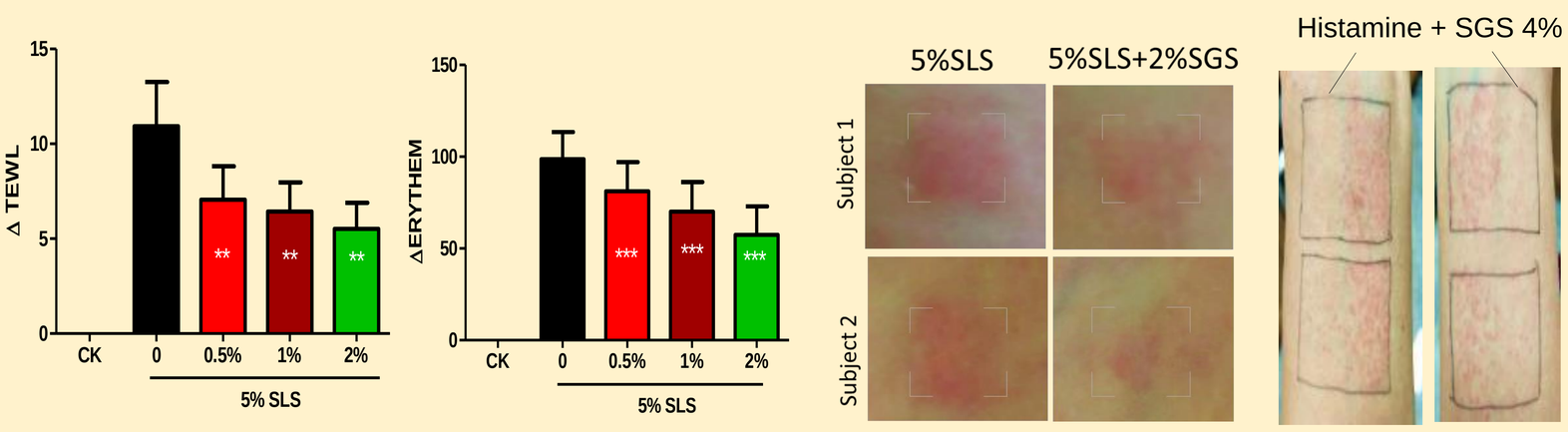
The cell viability and skin epidermis was improved by SGS after treated with SLS for 42 h on reconstructed Episkin at 0.125% to 0.5%.



Sub-erythemal inflammation in the skin is caused by the excess secretion of IL-1α and PGE-2. SGS was significantly decreased the production of these two cytokines after treated with SLS for 42 h on reconstructed Episkin at 0.125% to 0.5%.

** P<0.01 vs. SLS treatment group (0)

SGS relieves skin irritation



After SLS treatment, the TEWL and erythema increased on human skin. SGS downregulated TEWL and Erythema value by dosage against SLS and histamine.

*** P<0.001; ** P<0.01 vs. SLS treatment group (0)

Conclusion:

✓SGS improved the cell viability and inhibited the secretion of inflammation mediators to prevent & eliminate skin irritation, and finally to protect human skin from various damage and stimuli.

✓It can also increase the corneum thickness and upgrade the skin barrier after SLS treatment, to act as a intergradient for sensitive skin.

References:

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