

## 1. Introduction

With the more study of light, it was found that UVA and HEV (the spectrum from 400 to 500nm), aging, stress and staying up can cause our internal biological clocks to become desynchronized and skin barrier damage, which affects skin directly, resulting in dryness, dullness, pigmentation, destroy the cell structure and accelerate the aging of the skin.

With its great skin care benefits, Chinese medicinal herbs are the characteristic cosmetic active ingredients in China. In this study, through the theoretical study of Chinese medicinal herbs, we found an effective Chinese medicinal herb compound which can regulate the clock-controlled gene and regenerate damaged skin barrier.

## 2. Materials and methods

TCMs compound includes *Lindera strychnifolia* root extract and *Paeonia suffruticosa* flower/leaf/root extract, which were manufactured by patented technology.

Normal human fibroblasts were inoculated in 6-well plates in MEM supplemented with 10% FCS and then incubated at 37 °C in an atmosphere containing 5% CO<sub>2</sub>. They were then treated with TCMs or exposed to UV light (Philips Energylight) at a distance of 20cm at a light intensity of 10000lux for 30mins. The cells were then incubated at 37 °C in a incubator containing 5% CO<sub>2</sub>.

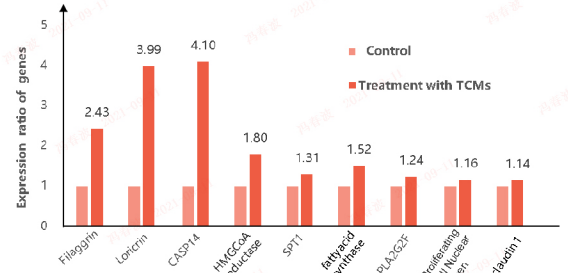
EpiDerm 3D skin tissue model was utilized and cultured following standard procedure before using. Exposures were applied to the apical side. HEV injury-3D skin model was treated with or without TCMs compound, reactive oxygen species (ROS) and MMP-1 assay were measured.

## 4. Conclusions

According to the theory of TCMs, which are beneficial to the skin were selected in this experiment. With a reasonable process, its essence active components were extracted to evaluate the circadian regulation, skin barrier regeneration, anti-HEV function. Selected TCMs stimulated the cellular immune system and enhanced skin resistance to the external conditions, also can effectively repair the damage or influence of skin cells caused by UVA, HEV or staying up. It is a good choice to be used in cosmetic product.

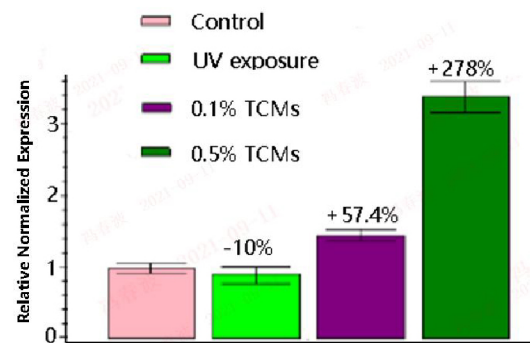
## 3. Results

### 3.1 Gene expression of skin barrier function by microarray chip



Expression ratio of skin barrier related genes compared to non-treated genes by microarray

### 3.2 Quantitative PCR on normal human fibroblasts to determine the capacity of TCMs to limit desynchronization of the circadian clock gene



### 3.3 HEV injury-3D skin model to evaluate the Tissue viability and tissue morphology

