

# PHLORETIN

【CAS No.】 60-82-2

【Introduction】 Phloretin is a dihydrochalcone compound and a type of natural phenols, it is a new natural skin whitening agent, extracted from peels or root barks of apples. It helps anti acne as it weak estrogen activity.

## 【Function】

- ◆ Skin whitening. Phloretin can inhibit melanocytes and tyrosinase activity, has good effects on various skin pigmentation. Its inhibiting tyrosinase ability is better than arbutin and kojic acid, the blend of them can greatly improve the inhibition ratio of tyrosinase, about 100%.
- ◆ Anti-inflammatory and immunosuppressive. NO production and phagocytosis rate of macrophages can be significantly reduced by phloretin.
- ◆ Anti-oxidant. Phloretin can remove free radicals in the skin, effectively prevent aging, cell mutation, accelerate cell metabolism, reduce wrinkles, enhance the skin supporting structure and immunity to UV light.

## 【Data】

Apply cream A, B, C, D, E according to the random number table, twice a day.

Cream A: without any bioactive substances;

Cream B: 3.0% arbutin ; Cream C: 0.5% phloretin;

Cream D: 1.0% phloretin; Cream E: 3.0 % phloretin;

The values of each pore after using these five kinds of cream are shown in the following figure: b is the color change from blue to yellow, MI is the melanin index;

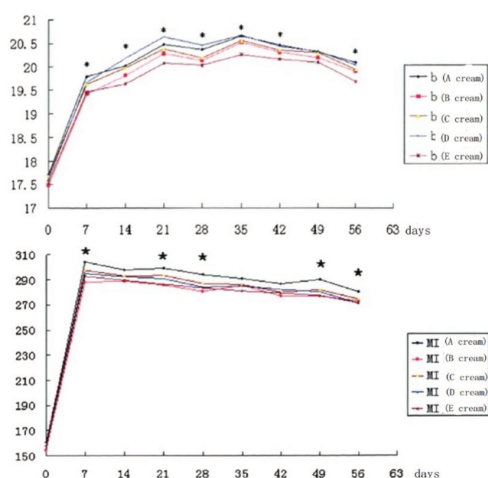


Figure 1: b values for each pores after used five kinds of cream.

Figure 2: MI values for each pores after used five kinds of cream.

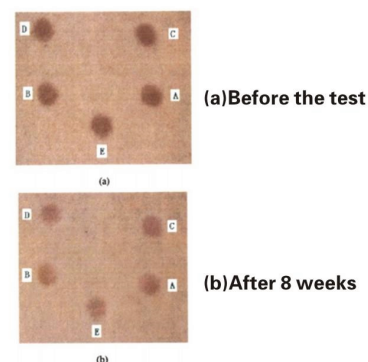
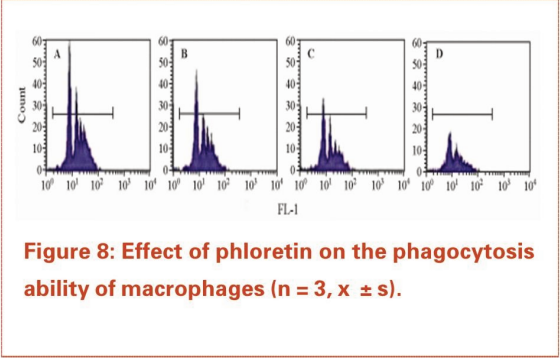
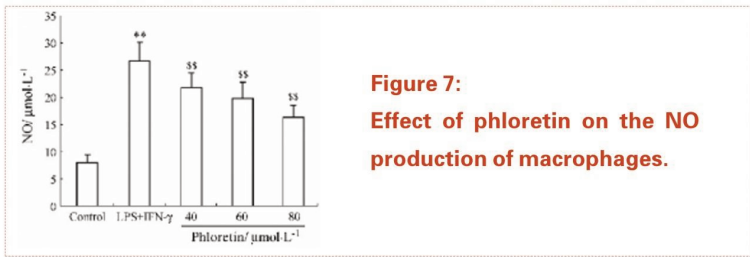
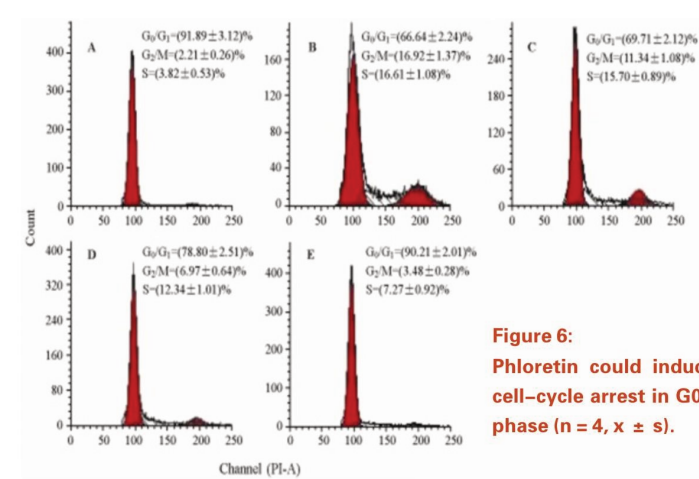
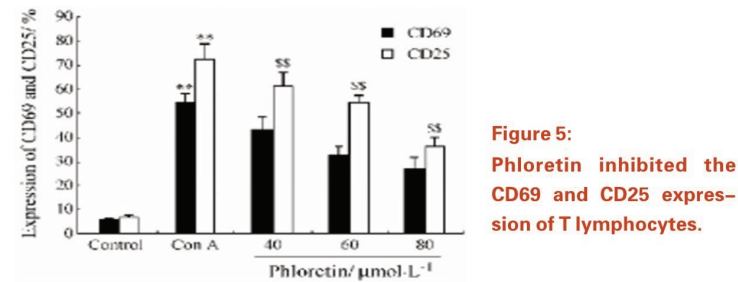
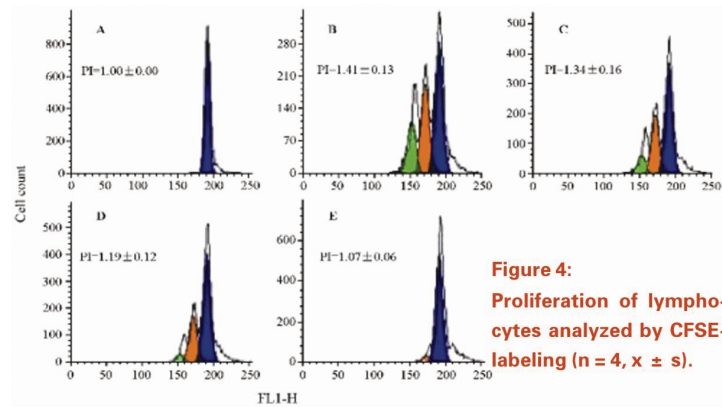


Figure 3: Skin Photo with UVA-induced dark spots after applied the cream.

b value indicates the skin color from blue to yellow, it reflects the skin speckle situation after UVA-induced. The results suggest that 3% phloretin cream act on skin pigmentation in the late phase after UV-induced and it is superior to 3% arbutin.

From the MI value trend, it can be seen that the ability of 0.5%, 1%, 3% phloretin cream inhibit the formation of dark spots and the ability increase as the concentration increasing, there's a dosedependent trend. The b value figure also shows that the efficacy of 3% concentration phloretin cream is better than 0.5% and l%. The higher concentration , the better whitening effect .



The above results showed that phloretin 40, 60, and 80 mol · L<sup>-1</sup> significantly inhibited the proliferation of T lymphocytes and the PI reduced from 1.41 ± 0.13 to 1.34 ± 0.16, 1.19 ± 0.12 and 1.07 ± 0.06, respectively. Phloretin significantly inhibited the expression of CD69 and CD25 P<0.01. The cell cycle distribution analysis showed that phloretin could induce a cell cycle arrest at G0/G1 phase. NO production of LPS + IFN-γ 0.1 group of macrophages was 26.72 ± 3.57 mol · L<sup>-1</sup>, and was significantly reduced by phloretin P<0.01. And phagocytosis rate of macrophages was significantly reduced by phloretin P<0.01. The results demonstrate that phloretin might be developed into a new immunosuppressive drug.

## [ Practical Hint ]

INCI Name	Phloretin
Dosage	Recommendation 5% – 1%
Specification	98%
Appearance	White powder
Solubility	Dissolved in ethanol, 1,3-butanediol etc. Do not dissolved in water.
Storage&Shelf Life	Store in tightly sealed and preferably full containers in cool, dry and ventilated area. 24 months when properly stored
Brand Application of the same material	Skinceuticals: Phloretin Cf Cosmetic Skin Solutions: Phloretin CF Serum Advanced Formula +