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PREPARATION OF ANTI-HYPERTROPHIC CREAM FROM LICORICE EXTRACT

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KEYWORDS : *Glycyrrhiza uralensis*, hypertrophic scar, keloid, fibroblast, preparation

INTRODUCTION

Scar is an overproduction of collagen or overproliferation of fibroblast. It results from the process of wound repairing, which is a biological part of the healing process ¹⁾. There are two types of scar, keloid and hypertrophic scar. *Glycyrrhiza uralensis* (Chinese licorice, CL) is a plant native to Asia, especially China. It has been used in traditional Chinese medicine because of its various pharmacological properties ²⁾. The main phytochemical content in CL is flavonoid, which has been found to have an anti-hypertrophic scar-derived fibroblasts activity. Our previous study found that CL extract had inhibitory activities on the proliferation of keloid fibroblast and the secretion of IL-6. Therefore, the purpose of this study was to prepare a formula for anti-hypertrophic cream from CL extract.

MATERIALS AND METHODS

Materials

CL extract, which already tested its activity on the inhibition of the proliferation of keloid fibroblast in both cell lines and animal model, was used in this study to prepare in a topical cream form. Glyceryl monostearate, propylene glycol, glycerine, cetyl alcohol, dimeticone, cyclomethicone, squalane, stearyl alcohol, titanium dioxide, and other chemicals were of pharmaceutical grade, unless otherwise stated. Viscometer (Brookfield, USA.), chromameter (Konica Minolta, USA.), hot air oven (MEMMERT, Germany), and refrigerator (Sharp, Thailand) were used for physical stability testing of the preparation.

Methods

CL cream preparation

A topical cream from CL extract was prepared as an anti-hypertrophic product. All chemicals using were modified from ³⁻⁴⁾. Glyceryl monostearate was used as emollient and stabilizing agents. It also provided smoothness, fine texture, and improved stability of the cream base. Cetyl alcohol was used as an emollient. Stearyl alcohol aided cream stiffness by combining with the water soluble emulsifying agent to form a cream base. Dimeticone and squalane were added to be an emollient and moisturizer. Isopropyl myristate was used as an enhancer to help skin penetration. Propylene glycol and glycerin were added to be humectants. Cyclomethicone were used for increasing the viscosity of the cream. Jojoba oil, is commonly used on skin, was added to be a skin nourishing agent. Vitamin E was added to be a nourishing agent. It also has anti-oxidative effect, which beneficially help preventing the propagation of free radicals in tissue.

Physical stability

The cream preparation was tested physical stability using heating cooling cycle method. It was stored in a refrigerator (4°C) for 48 hours, and was then kept in a hot air oven at 45°C for 48 hours. The preparation was redone all steps mentioned above for 6 cycles to define physical stability of the preparation.

RESULTS AND DISCUSSION

CL cream preparation

The CL formulation was a cream base preparation. Ingredients of the formulation were shown in Table 1. As the unique color of the extract, titanium dioxide aided in minimization the dark to be the beige cream color of this formula (Figure 1).

Physical stability

The cream preparation showed no any significant changes in physical appearance after keeping at 4°C and 45°C for 6 cycles (Table 2).

Table 1 Ingredients of CL cream formulation

Ingredients	Objectives	Amount (%)
Glyceryl monostearate	Emollient	1-4
Cetyl alcohol	Emollient	2-7
Stearyl alcohol	Stiffening agent	0-5
Dimeticone	Emollient and moisturizer	0-5
Squalane	Emollient and moisturizer	1-5
Isopropyl myristate	Enhancer	1-5
Propylene glycol	Humectants	8-12
Glycerin	Humectants	1-5
Cyclomethicone	Viscosity agent	1-5
Jojoba oil	Skin nourishing agent	0-5
Vitamin E	Nourishing agent	0-5
CL extract	Active agent	1-6

Figure 1 CL formula in a cream preparation showing beige color

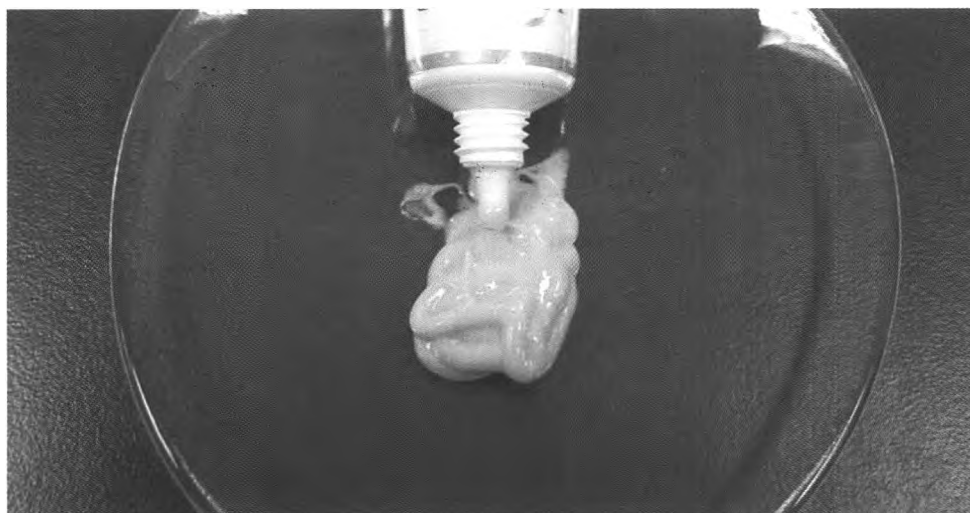


Table 2 Physical appearances of CL cream preparation after heating cooling cycle method for stability testing; where L, a, and b are parameters for detecting color values. L is the lightness value (0 to 100), a is the yellowish value (-60 to 60), and b is the greenish value (-60 to 60).

No. of cycle	Cracking	Color	Odor	Viscosity (CPs)
Beginning	no	L=48.86 a=0.35 b=0.36	no	1381.7±0.21
2	no	L=45.32 a=0.35 b=0.36	no	1310.5±0.06
4	no	L=45.16 a=0.35 b=0.36	no	1350.1±0.04
6	no	L=43.98 a=0.35 b=0.36	no	1315.0±0.06

CONCLUSION

The formulation from CL extract was prepared in a cream base preparation with beige color. After heating cooling cycle method for 6 cycles, the preparation did not show any remarkable changes in physical appearance. Altogether with pharmacological activity in reducing hypertrophic scars, this cream formula would provide a new alternative anti-hypertrophic agent from natural herbal remedy.

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REFERENCES

1. <http://en.wikipedia.org/wiki/Scar>
2. http://en.wikipedia.org/wiki/Glycyrrhiza_uralensis
3. Martindale: The complete drug reference. (2007) The Pharmaceutical Press. London
4. Rowe RC, Shekkey PJ, Owen SC. (2006) Handbook of pharmaceutical excipients. Fifth edition. Butler&Tanner, Frome, Somerset, Great Britain.