

Teaser Memorandum

INDUSTRY-ACADEMIC COOPERATION FOUNDATION,
INHA UNIVERSITY

A skin whitening composition containing (2Z, 8Z)-matricaria acid methyl
ester as an active ingredient

Executive Summary

- Eun-ki Kim, Ph.D, a professor of College of Engineering, Inha University, developed the skin whitening composite containing the (2Z,8Z)-matricaria acid methyl ester as an effective ingredient.
- The skin whitening composite, the external drug for skin, the cosmetic composite, and the health functional food containing as the effective ingredients the activated fraction of the *erigeron breviscapus* extract and the (2Z,8Z)-matricaria acid methyl ester separated from the fraction are provided.
- The Industry-University Cooperation Foundation Inha University, a Technology Licensing Organization in Inha University, intends to enter into a technology transfer or licensing transaction with regard to skin whitening composition. Terms of the transaction are not set, and interested parties may further discuss the details if they wish to enter into an agreement.

Industry Sector :

Cosmetic

Therapeutic Target :

Dermatological

State of Development :

Early stage

Key Technology Highlights

- The skin whitening composite containing as the effective ingredients the activated fraction of the *erigeron breviscapus* extract and the (2Z,8Z)-matricaria acid methyl ester separated from the fraction are provided.
- The excellence of the technology is that as the result of separating, purifying, and identifying the whitening activating ingredients and checking the effect while studying the effective ingredients of the *erigeron breviscapus* extract, the hexane fraction of the extract and the (2Z,8Z)-matricaria acid methyl ester separated from the fraction suppress the melanin generation and are used usefully as the skin whitening composite, the external drug for skin, the cosmetic composite, and the health functional food because of the cell non-toxicity.

IP Owner Summary

Industry-University Cooperation Foundation, Inha University

- TLO in Inha University

Personal Description of Researcher

- Name:
Eun-ki Kim, Ph.D
- Present Position:
Professor
Bioactive Material Laboratory, Department of Biological Engineering, Inha University
- Office address:
Department of Biological Engineering,
Inha University, Yonghyeon 1(il).4-dong,
Nam-gu, Incheon 402-751, Korea

Market Feasibility

- Domestic and foreign market size:
 - Domestic market size : 4.8 billion dollars(in 2009)
 - Foreign market size : 223.7 billion dollars(in 2009)
- Domestic and foreign market opportunity (competitors and competing product):
 - Selina

Trend & Partnership

- Future outlook and trends related to technology :
- Technology Transfer and commercialization conditions :
Consultation(exclusive license or non-exclusive license)
- Type of business relationship sought (including licensing availability) :
Exclusive or non-exclusive licensing agreement

Technology Overview

■ Technology Platform

The core technology of Inha University relates to a skin lightening composition comprising an extract from a *erigeron breviscapus*, or (2Z,8Z)-matricaria acid methyl ester as an active ingredient.

■ Background and unmet needs

Melanin plays the roles of absorbing the light UV energy to protect the skin organ below the thick skin from the damage done by UV and protecting the skin from the external harmful factors by holding the harmful oxygen and the free radical generated within the body skin. Moreover, a human skin color is determined on the basis of the melanin quantity inside the skin cell. A person with much melanic pigment has the skin with a brown or black color. On the other hand, a person with little melanic pigment has the skin with a white color.

There are various approaches suppressing the melanin generation including suppression of tyrosinase generation, suppression of tyrosinase activation, reduction of the current melanin, suppression of photooxidation, or promotion of melanin discharge. The kojic acid, arbutin, and their derivatives were developed as the tyrosinase inhibitors but have several disadvantages in terms of stability, side effects, unclear effect and effectiveness, and so on.

As the result of separating, purifying, and identifying the whitening activating ingredients and checking the effect while studying the effective ingredients of the *erigeron breviscapus* extract stated above on the basis of the patent (patent registration no. 10-0602684) verifying that the *erigeron breviscapus* extract has the whitening effect, the inventor of the technology completed the invention by clarifying that the hexane fraction of the extract stated above and the (2Z,8Z)-matricaria acid methyl ester separated from the fraction stated above suppress the melanin generation.

■ Discovery and Achievements

As the result of examining with the measurement of the optical density the change of the quantity of the melanin generated by processing the hexane fraction and the (2Z,8Z)-matricaria acid methyl ester of the invention after cultivating the melan-a cell, the melanocyte, to measure the whitening effect, the hexane fraction showed the effect of suppressing the melanin generation in the low concentration compared to a non-processed group that is a negative contract group, and the (2Z,8Z)-matricaria acid methyl ester showed the effect of suppressing the melanin generation in the low concentration compared to the Phenylthiourea (PTU) known to be a positive contract group and to be the material suppressing the melanin generation and to the non-processed group that is a negative contract group.

Table 1. Investigation of Melanin Generation Inhibition by Measuring OD(optical density)

Sample	Melanin generation rate(%)
Non-treated group	100
Phenylthiourea(50 uM)	36.19
Hexane fraction(6 ug/ml)	61.5
(2Z,8Z)-matricaria acid methyl ester(4.5 uM)	36.37
(2Z,8Z)-matricaria acid methyl ester(9 uM)	26.92

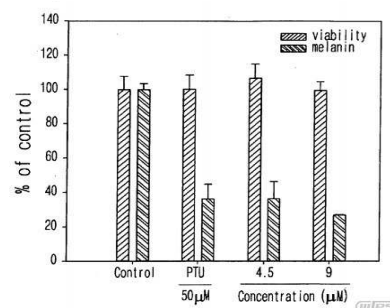


Fig 1. A graph illustrating the melanin generation and cell survival rate after (2Z,8Z)-matricaria acid methyl ester treatment

■ Toxicological data

In order to decide whether the organic solvent fraction and the (2Z,8Z)-matricaria acid methyl ester can be used as the skin whitening composite, the cell toxicity test was done. It was examined by using the measurement of the optical density after performing the cultivation and dyeing by processing the hexane fraction and the (2Z,8Z)-matricaria acid methyl ester with various concentrations after inoculating the cell to the well plate. As the result, the hexane fraction and the (2Z,8Z)-matricaria acid methyl ester showed the high survival rates in the low concentration with little toxicity.

Table. 2. Toxicity Test

Sample	Cell survival rate(%)
Non-treated group	100
Phenylthiourea(50 uM)	100.19
Hexane fraction(6 ug/ml)	100.6
(2Z,8Z)-matricaria acid methyl ester(4.5 uM)	106.66
(2Z,8Z)-matricaria acid methyl ester(9 uM)	99.44

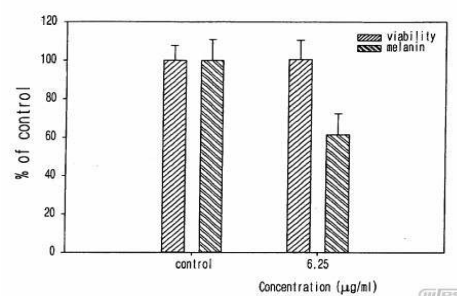


Fig. 2. A graph illustrating the melanin generation and cell survival rate after hexane fraction treatment

Patents and Publications

Country	Appln. No.	Status	Description
Korea	0982435	Granted	A skin whitening composition containing (2Z, 8Z)-matricaria acid methyl ester as an active ingredient
U.S.	2009-390941	Pending	Method for skin whitening using (2z, 8z)-matricaria acid methyl ester
Japan	2009-032518	Pending	(2Z,8Z)-メトリカリア酸メチルエステルを有効成分として含む皮膚美白用組成物
Europe	2092837	Granted	Compositions for skin whitening comprising (2Z, 8Z)-matricaria acid methyl ester
Korea	0602684	Granted	Cosmetic composition comprising extract of <i>Erigeron breviscapus</i> for whitening

Contact Point

KHIDI (Korea Health Industry Development Institute) is currently receiving inquiries from interested parties in this transaction. If you are interested, please contact any of the KHIDI professionals below :

Name	Title	Tel. number	E-mail address
Yong-U Kim	Business Development Manager	82-43-713-8842	gkimyw@gmail.com