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(54) **Title:** COMPOSITION FOR TREATING ATOPIC DERMATITIS COMPRISING EXTRACTS OF BAMBOO AND SCUTELLARIA

(57) **Abstract:** The present invention relates to a composition comprising of plant extract as an active component, specifically, Bamboo extract and Scutellaria extract, for the treatment and prevention of atopic dermatitis. The present invention is a natural ingredient obtained from a plant. The present invention can control immune responses by inhibiting the release of histamine and leukotrien, and thus, has effect in the treatment or prevention of allergic diseases, inflammatory diseases and skin diseases, specifically atopic dermatitis. The present invention has been proven safe and beneficial effecting the treatement of atopic dermitatis through clinical trials, and thus, can be used for the treatment and prevention of atopic dermitatis.

WO 2008/044894 A1

COMPOSITION FOR TREATING ATOPIC DERMATITIS COMPRISING EXTRACTS OF BAMBOO AND SCUTELLARIA

TECHNICAL FIELD

The present invention is a composition comprising of a plant extract as an active ingredient for treating atopic dermatitis, specifically a mixture composition comprising of Bamboo extracts and *Scutellaria* extracts.

BACKGROUND ART

Atopic dermatitis is an allergic disease caused by a defect of a stratum corneum which is a protective wall located in the outermost part of the skin which is caused by hereditary, environmental, or immunological factors and is exacerbated in arid climates. Many people are afflicted by the atopic dermatitis, specifically 0.5-1% of the total population. In cases of minors, 5-10% of children are afflicted by the atopic dermatitis. 50% of patients can recover by their second birthday, and 25% can recover by puberty. However, 25% never recover and continue to suffer from atopic dermatitis into adulthood.

The main symptoms of atopic dermatitis are severe pruritus, xeroderma, eruption or oozing of the skin, boils, scale like skin (scaly skin), etc.

The pathogenesis of atopic dermatitis is not completely understood, but genetic factors are attributed to most cases of atopic dermatitis, and the pathogenesis is related to immune response. It has been shown that atopic dermatitis can be caused by a combination of dry skin, skin that is prone to itching more than the average person, infections casued by bacteria · virus · fungi, etc., and emotional and environmental

factors.

Specifically, an antibody (IgE) produced by a mast cell during the body's process of naturally eliminating a material which causes a rash to form when in contact or invading the body causes a hypersensitive reaction when this same material invades the body again producing a histamine which causes the atopic dermatitis. The mast cell is distributed widely throughout organs such as, the skin, respiratory organs, mucosa of the gastrointestinal tract, circum of lymphatic duct, brain, and is known as the cell that causes diverse inflammation and allergic reactions. The histamine released from the mast cell causes inflammation and immediate allergic reaction by inducing vasodilation, smooth muscle-contraction of the gastrointestinal and/or bronchial tract, secretion of glandular cells, exacerbation of the reactions, etc., and serves as an intermediary for diverse biological effects such as secretion of mucus and local protein.

Pharmacotherapies, such as steroids, anti-histamines, antibiotics are usually prescribed for atopic dermatitis. The steroid agent (adrenal cortical hormone agent) can act as an anti-inflammatory and immuno-suppressant and has positive effect in treating the disease, but if used over a long period of time, side effects such as skin-weakening, symptom of systemic hormone, toxicity can result. Currently, uses of immune-suppression agents and novel anti-histamine agents have been studied for treating atopic dermatitis. However, anti-histamine agents cannot completely suppress the allergic reaction since other chemical transmitters in addition to the histamine can induce the allergic reaction. The mast cell releases other chemical transmitters such as leukotriene C4 and leukotriene B4 in addition to the histamine. Leukotriene C4 contracts the smooth muscle of bronchus like the histamine, and leukotriene B4 causes chronic

inflammation by inducing neutrophil and eosinophil and injures neighboring cells.

Thus, a novel composition for the effective treatment of atopic dermatitis without the side-effects is required.

Bamboo belongs to the Poaceae family. There are about 280 known species of bamboo all over the world, and about 70 species grow naturally or are cultivated in Korea. There are 11 representative kinds of Bamboo; *Phyllostachys nigra*, *Phyllostachys bambusoides* (*Cedrela sinesis*), *Phyllostachys edulis* (*Phyllostachys pubescen*), *Phyllostachys nigra* for. *Punctata*, *Sasa borealis* var. *gracilis*, *Arundinaria simonii*, *Sasa borealis* var. *chiisanensis*, *Sasa borealis*, *Sasa albo-marginata*, *Pseudosasa japonica*, etc. Among them, *Phyllostachys bambusoides* (*Cedrela sinesis*), *Phyllostachys nigra* and *Phyllostachys edulis* are cultivated. According to Dongeui-Bogam, Compendium of Materia Medica and the divine Farmer's Materia Medica, Bamboo is effective in treating palsy and hypertension, and was used to treat pneumonia and bronchitis to bring down fever, loosen phlegm and as a coolant. Recently, it has been reported that Bamboo has been used to treat hypertension, atherosclerosis and cardiovascular disease. Bamboo is also known to have anti-oxidant effect which is effective in the prevention of cancer and aging. Also, phytochemicals such as organic acid, dietary fiber, tannin, benzofuran within the plant are expected to contribute to preventing diseases of the circulatory system.

The conventional studies for bioactive compounds focusing on antimicrobial activity have been reported mostly in Korean and Japan. Japanese researchers discovered the 2,6-dimethylbenzoquinone and benzoic acid which are antimicrobial compounds in the leaf of Bamboo, and Korean Patent No. 10-0465113 discloses the effects of bamboo extract in improving blood circulation and preventing inflammation.

Japanese Patent Publication H09-278662 discloses fats and oils which have anti-allergic effect contains the Bamboo extract obtained by using the soxhlet method using ether as a solvent, and WO 2002/07745 discloses that Bamboo extract obtained by using water has antipruritic effect which is effective in the treatment of atopic dermatitis.

Scutellaria has bioactive and pharmalogical properties and has been used in oriental medicine for treating fevers and allergies. It acts by dilating blood vessels and brings down blood pressure, and inhibits atherosclerosis. Bicalin contained in scutellaria is a kind of flavonoid which is effective to sedate or stop bleeding by suppressing the permeability of capillaries. Also, bicalin inhibits the release of chemical transmitters by strengthening the mast cell membrane and so can do anti-allergic action. Specifically, it is known that the pharmacological properties of *Scutellaria* are improving infections casued by allergies, inhibiting increased vascular permeability and alleviating inflammatory discharge of blood and congestion by strong anti-inflammatory effect, and these pharmacological properties are derived from bicalin. Bicalin is hydrolyzed to baicalein and glucuronic acid. Baicalein acts as a diuretic and glucuronic acid acts as deintoxicant. Korean Patent Publication No. 1996-0003725 discloses a therapeutic agent comprising of the flavonoid ingredient of scutellaria. Korean Patent Publication No. 1996-0040370 discloses a composition for the prevention and treatment of alcohol disorder comprising of *Scutellaria* extract and flavone glycoside. Korean Patent Publication No. 2002-0031608 discloses a *Scutellaria* extract that has positive antimicrobial effect, and the process for preparing the extract and the pharmaceutical composition of the extract. Korean Patent No. 10-0522579 discloses a mixture extract of *Scutellaria* and Omija (Schizandra chinensia Baillon) which has anti-stress effect.

The above properties of Bamboo or *Scutellaria* have been known, but there has not been reported any therapeutic effect for atopic dermatitis using the mixture composition comprising of Bamboo extract and *Scutellaria* extract.

The inventors of the present invention have studied a novel compound for the treatment of atopic dermatitis. As a result, they discovered and confirmed that the mixture composition comprising Bamboo extract and *Scutellaria* extract can strongly inhibit the release of histamine and leukotrien without any side-effects and has positive therapeutic effect on atopic dermatitis, to complete the present invention.

DISCLOSURE OF THE INVENTION

The objection of the present invention is to provide a composition comprising of a plant extract as an active ingredient which will have a positive therapeutic effect for the treatment and prevention of atopic dermatitis without any side-effects.

Also, the objection of the present invention is to provide a use of mixture composition of Bamboo extract and *Scutellaria* extract for the manufacture of a medicament for the treatment and prevention of atopic dermatitis.

Also, the objection of the present invention is to provide a method of the treatment and prevention of atopic dermatitis by administering to the subject a therapeutically effective amount of mixture composition of Bamboo extract and *Scutellaria* extract.

BRIEF DESCRIPTION OF THE DRAWINGS

Fig. 1 is a graph showing the improvement rate of clinical trial items on antecubital space and popliteal space after administering the present extract.

Fig. 2 is a digital steel photo showing the improvement effect of atopic dermatitis according to administration of the present extract by comparing photos taken before and after using the product.

Fig. 3 is a graph showing measurement result of the moisture loss rate ($g/m^2 \cdot h$) which occurred per unit area and per unit time by using Tewameter TM300 (Courage+ Khazaka, Germany) on 10cm lower part of popliteal fossa and antecubital fossa at the time before the product was used and after the product was used.

DETAILED DESCRIPTION OF THE INVENTION

To achieve the above objectives, the present invention provides a composition for the treatment of atopic dermatitis comprising of Bamboo extract and Scutellaria extract as an active ingredient.

Also, the present invention provides a use of mixture composition of Bamboo extract and *Scutellaria* extract for the manufacture of a medicament for the treatment and prevention of atopic dermatitis.

Also, the present invention provides a method of the treatment and prevention of atopic dermatitis by administering to the subject a therapeutically effective amount of mixture composition of Bamboo extract and *Scutellaria* extract.

In the composition of the present invention, Bamboo is selected from *Phyllostachys*, *Sasa* or *Pseudosasa*, and *Phyllostachys* is preferably selected from the

group consisting of *Phyllostachys edulis*, *Phyllostachys nigra* var. *henonis*, *P. nigra*, *P. bambusoides*, *P. pubescence*, *P. nigra* for. *punctata* and *P. comprossa*, and *Sasa* is preferably selected from the group consisting of *Sasa coreana Nakai*, *S. coreana*, *S. kurilensis*, *S. quelpaertensis*, *S. borealis*, *S. borealis* var. *chiisanensis* and *S. borealis* var. *gracilis*, and *Pseudosasa* is preferably selected from *Pseudosasa japonica* and *Pseudosasa japonica* var. *purpurascens*.

In the composition of the present invention, for Bamboo and *Scutellaria* commercially purchased herbs can be used. The whole herb, branch, shell, leaf, sprout, root, endodermis, etc., can be used, preferably in the form of powder or extract.

The Bamboo extract and *Scutellaria* extract of the present invention can be used by extracting Bamboo and *Scutellaria* with water, organic solvent, or mixing solvents thereof. Although all conventional solvents can be used as the above organic solvent, polar solvent such as water, C_{1-4} alcohol (such as methanol, ethanol etc.), etc., or mixing solvent thereof is perferred. Preferably, water-insoluble fraction of 50-90 % of ethanol extract or ethanol-soluble fraction of hot water extract can be used as the above bamboo extract.

The above extraction may be carried out by conventional methods such as hot water extraction, sonication, etc., and a lyophilized product of the extract can be used for the present composition. In addition, the extract can be further purified by conventional fractionation method or chromatography, and such fractionated material or purified material is also within the scope of the present invention.

In the composition of the present invention, Bamboo or *Scutellaria* can be used alone, but it is preferable to use a combined composition that Bamboo extract is

additionally mixed with *Scutellaria* extract to show synergistic effect.

In the composition of the present invention, the synergistic effect at the time of administering the combination in comparison with administration of the extract alone was measured and confirmed by using the COLBY formula (COLBY S. R., Calculating synergistic and antagonistic response of herbicide combinations, Weeds 15, 20-22, 1967).

As shown above, when the composition is used in combination with Bamboo extract and *Scutellaria* extract, their weight ratios of Bamboo : *Scutellaria* could be in 1~10 : 1~10, but preferably 1~5 : 1~5, or more preferably 1~3 : 1~3.

The composition of the present invention can be prepared into conventional pharmaceutical preparations according to conventional methods in the pharmaceutical field, for example, solution such as drinks, syrup, capsule, granule, tablet, powder, pill, ointment, and emulsion, skin external preparation such as gel, etc., by mixing it with a pharmaceutically acceptable carrier, excipient, etc.; and can be administered orally or parenterally.

The composition of the present invention is appropriately administered depending on the extent of absorption of the active ingredients into the body; excretion rate; age, weight, sex, and condition of patient; severity of treated disease, etc. However, generally, the dosage for an adult is in solution 0.0001~100 mg/kg, or preferably 0.001~100 mg/kg, per day. It can be administered once a day or several times a day. The amount should not limit the scope of the present invention in any manner.

Hereinafter, the present invention will be described in more detail with reference to the following examples, but the scope of the present invention should not be construed to be limited thereby in any manner.

Examples

Example 1. Preparation of Bamboo extract

Example 1-1. Preparation of Bamboo ethanol extract

Dried bamboo (20kg) was extracted by adding 25% of ethanol (200ℓ) and heating the mixture at 80℃ for 6hr. The extract was filtered and concentrated to remove the ethanol until the extract volume reached 5ℓ. The concentrated extract was then cooled to room temperature. The pellets were collected and dried to obtain the bamboo extract (390g).

Example 1-2. Preparation of Bamboo hot water extract

Dried bamboo (20kg) was extracted by adding water in the amount equivalent to 10 times the weight of the dried bamboo and heating the mixture at 100℃ for 4hr. The extract was filtered and concentrated under reduced pressure. The concentrated extract was added to ethanol (10ℓ) and stirred at 70℃ for 2hr, and then cooled to room temperature. The pellets were filtered and concentrated under reduced pressure to obtain the bamboo extract (350g).

Example 2. Preparation of *Scutellaria* extract

Scutellaria (1Kg) was added to water (8ℓ) and extracted by refluxing at 80℃ for 2hr. The extract was cooled, filtered and concentrated, to obtain the Scutellaria extract powder (330g).

Example 3. Preparation of mixture composition

The mixture composition was prepared by mixing Bamboo extract obtained from Example 1 and *Scutellaria* extract obtained from Example 2. The weight proportion of the Bamboo extract to the *Scutellaria* extract should be 1 : 1, 1 : 2, 1 : 3 or 2 : 1, 3 : 1.

Experiments

Experiment 1. Measurement of inhibition activity of releasing histamine and leukotrien from the mast cell according to the examples

The release of histamine and leukotrien from the mast cell is one of the major causes for the allergic reaction. The effect of the mixture composition of the Bamboo extract and the *Scutellaria* extract in inhibiting the release of histamine and leukotrien from the mast cell was measured.

Experiment 1-1. Isolation of the mast cell from liver

Lung tissue (3g / 1 pig) was isolated from eight female guinea pigs (200g) and fat tissue, bronchus and blood were removed from the lung tissue. The isolated lung tissue was treated with enzyme (5mg/ml of cllagenase, 1.8unit/27㎕ of elastase) by using Tyrode TGCM buffer containing Ca^{2+}, Mg^{2+} and 0.1% of gelatin at 3 times for 15, 15, 25mins. The each enzyme treated lung tissue was filtered by nylon mesh and metal mesh (100㎛), and then centrifuged (called 'monodispersed mast cell'). The pellets was suspended with TG buffer (16ml) containing 0.1% of gelatin, but no Ca^{2+} and Mg^{2+}, and centrifuged by loading to rough Percoll (1.041mg/ml density) at 1,400rpm for 25 mins, to

obtain the pellets. The pellets were re-suspended with TG buffer (8ml) and centrifuged by loading to discontinuous Percoll (1.06-1.10mg/ml density) at 1,400rpm for 25mins, to isolate several cell layers. Among the several cell layers, the third and fourth layers were washed twice with TGCM buffer since the mast cell exists in third and fourth layers. The whole cell and mast cell were stained with trypan blue and alcian blue. The purity of the mast cell was measured by calculating the number of cells, to obtain about 80-90% of the mast cell.

Experiment 1-2. Inhibition of releasing histamine from the mast cell

The mast cell (4105 cells) was treated with guinea pig IgG1 antibody (anti-OVA 1ml/106 cells) at 37℃ for 45mins, and washed with TGCM buffer to remove anti-OVA antibodies which are not bound to the membrane of the mast cell. The mast cell was suspended with TGCM buffer (1ml) and pre-treated with each reagents (30㎍ concentration). The mast cell was reacted by sensitizing using ovalbumin (1.0㎍/㎖) for 10 mins, cooled in ice, and centrifuged, to measure histamine from the supernant.

The amount of histamine in each sample was measured by modifying the method of Siraganian and using automated continuous-flow extraction and a flourometic analyzer (Astoria analyzer series 300, Astoria-pacific international, Oragon, USA). 1N-hydrochloric acid, 0.73M phosphoric acid, 5N sodium hydroxide, 1N sodium hydroxide, saline diluents and sampler wash, o-phthaladehyde solution was prepared and connected to a tube linked to the analyzer. The storage solution of histamine was diluted to 20ng, 10ng, 5ng, 3ng and 1ng, and the concentration-dependent result of standard curve was obtained. Then, each sample was diluted with 2% of perchloric acid and the amount of

histamine was measured. The result showed that the Bamboo extract and the *Scutellaria* extract showed inhibition activity, respectively, and the mixture composition of the Bamboo extract and the *Scutellaria* extract also showed high inhibition activity. The synergistic effect at the time of administering the combination in comparison with administration of the extract alone was measured and confirmed by using the COLBY formula (COLBY S. R., Calculating synergistic and antagonistic response of herbicide combinations, Weeds 15, 20-22, 1967) (Table 1).

[Table 1]

The inhibition activity of releasing histamine from the mast cell per each extract.

Sample	Inhibition activity(%)
Control	32.5±0.25
Bamboo extract	22.4±0.09 (31.1%)
Scutellaria extract	26.4±0.11 (18.8%)
Mixture composition (Bamboo : *Scutellaria*=1 : 1)	10.1±0.25 (70.5%)
Mixture composition (Bamboo : *Scutellaria*=1 : 2)	15.4±0.46 (52.6%)
Mixture composition (Bamboo : *Scutellaria*=1 : 3)	19.7±0.52 (39.4%)
Mixture composition (Bamboo : *Scutellaria*=2 : 1)	9.3±0.32 (71.3%)
Mixture composition (Bamboo : *Scutellaria*=3 : 1)	13.2±0.11 (59.4%)

Experiment 1-3. Inhibition of releasing leukotrien from the mast cell

The amount of leukotrien in each sample was measured by using the method of Aharoney et al. (Biochem. Biophys. Res. Commun., p574-579, 1983). The leukotrien abtibody was suspended with 5mM MES buffer containing 0.1% of gelatin, and to each tube the supernant of the cell (100㎕) which was treated with a reagent (30㎍) was added. The leukotrien antibody and [^{3}H] leukotrien D4 (LTD_4) were added to the supernant and was allowed to react at 4℃ for 2hr. The reaction was stopped by using dextran coated charcoal and the inhibition activity was measured by using liquid scintillation spectrometry. The results showed that the Bamboo extract and the *Scutellaria* extract showed inhibition activity, respectively, and the mixture composition of the Bamboo extract and the *Scutellaria* extract also showed high inhibition activity. The synergistic effect at the time of administering the combination in comparison with administration of the extract alone was measured and confirmed by using the COLBY formula (COLBY S. R., Calculating synergistic and antagonistic response of herbicide combinations, Weeds 15, 20-22, 1967) (Table 2).

[Table 2]

The inhibition activity of releasing leukotrien from the mast cell per each extract.

Sample	Inhibition activity(%)
Control	679.0±54.19
Bamboo extract	449.0±40.47(33.8%)
Scutellaria extract	569.4±32.89(16.1%)

Mixture composition (Bamboo : *Scutellaria*=1 : 1)	149.5±8.26(78.0%)
Mixture composition (Bamboo : *Scutellaria*=1 : 2)	282.1±47.55(58.5%)
Mixture composition (Bamboo : *Scutellaria*=1 : 3)	350.1±33.1(48.4%)
Mixture composition (Bamboo : *Scutellaria*=2 : 1)	147.5±11.92(78.3%)
Mixture composition (Bamboo : *Scutellaria*=3 : 1)	322.9±33.65(52.4%)

Experiment 2. Clinical trials

20 patients suffering from severe atopic dermatitis were tested by using the mixture composition of Bamboo extract and *Scutellaria* extract selected from Experiment 1 for 4 weeks. The present composition was spread onto the popliteal fossa and the antecubital fossa, and the results were investigated.

In the clinical trial, the effects before and after using the product were estimated by using the Local SCORAD index. The results were estimated by rating the degress of 6 intensity items, erythema, edem/population, oozing/crusting, excoriation, lichenification, dryness on a scale of 4 (0=absent, 1=mild, 2=moderate, 3=severe) for the right and left side of popliteal fossa and antecubital fossa which were then used to show improvement rate.

The results showed that there was improvement effect after using the product, specifically there was more than 50% improvement in erythema, oozing/crusting and excoriation (Figure 1). The result was photographed by using a Digital Still Camera (DSC-S75, Sony) at the time before the product was used and after the product was used

(Figure 2). Also, the moisture loss ($g/m^2 \cdot h$) due to evaporation which occurred per unit area and per unit time was estimated by using Tewameter TM300 (Courage+ Khazaka, Germany) on 10cm lower part of popliteal fossa and antecubital fossa at the time before the product was used and after the product was used. The moisture loss on trandermal was reduced each time, specifically the improvement on the antecubital fossa was better than on the popliteal fossa (Figure 3).

INDUSTRIAL APPLICABILITY

The present invention is a natural ingredient obtained from a plant, and can control immune responses by inhibiting the release of histamine and leukotrien. It has been confirmed that the present invention is safe and is beneficial to the treatment of atopic dermitatis, and thus, the composition can be used for the treatment and prevention of atopic dermitatis.

CLAIMS

1. A pharmaceutical composition for the treatment and prevention of atopic dermatitis comprising:

a mixture of Bamboo extract and *Scutellaria* extract as the active components.

2. The composition according to claim 1, wherein the weight ratio of Bamboo extract to *Scutellaria* extract is 1-10 : 1-10.

3. The composition according to claim 2, wherein the weight ratio of Bamboo extract to *Scutellaria* extract is 1-5 : 1-5.

4. The composition according to claim 2, wherein the weight ratio of Bamboo extract to *Scutellaria* extract is 1-3 : 1-3.

5. The composition according to any one of claims 1-4, wherein the Bamboo extract is 50-90% of ethanol extract.

6. The composition according to any one of claims 1-4, wherein the Bamboo extract is ethanol-soluble fraction of hot water extract.

7. The composition according to claim 5, wherein the *Scutellaria* extract is extracted with water, methanol, ethanol or a mixture thereof.

8. The composition according to claim 6, wherein the *Scutellaria* extract is extracted with water, methanol, ethanol or a mixture thereof.

9. A use of mixture composition of Bamboo extract and *Scutellaria* extract for the manufacture of a medicament for the treatment and prevention of atopic dermatitis.

10. The use according to claim 9, wherein the weight ratio of Bamboo extract to *Scutellaria* extract is 1-10 : 1-10.

11. The use according to claim 10, wherein the weight ratio of Bamboo extract to

Scutellaria extract is 1-5 : 1-5.

12. The use according to claim 10, wherein the weight ratio of Bamboo extract to *Scutellaria* extract is 1-3 : 1-3.

13. The use according to any one of claims 9-12, wherein the Bamboo extract is 50-90% of ethanol extract.

14. The use according to any one of claims 9-12, wherein the Bamboo extract is ethanol-soluble fraction of hot water extract.

15. The use according to claim 13, wherein the *Scutellaria* extract is extracted with water, methanol, ethanol or a mixture thereof.

16. The use according to claim 14, wherein the *Scutellaria* extract is extracted with water, methanol, ethanol or a mixture thereof.

17. A method of the treatment and prevention of atopic dermatitis by administering to the subject a therapeutically effective amount of mixture composition of Bamboo extract and *Scutellaria* extract.

18. The method according to claim 17, wherein the weight ratio of Bamboo extract to *Scutellaria* extract is 1-10 : 1-10.

19. The method according to claim 18, wherein the weight ratio of Bamboo extract to *Scutellaria* extract is 1-5 : 1-5.

20. The method according to claim 18, wherein the weight ratio of Bamboo extract to *Scutellaria* extract is 1-3 : 1-3.

21. The method according to any one of claims 17-20, wherein the Bamboo extract is 50-90% of ethanol extract.

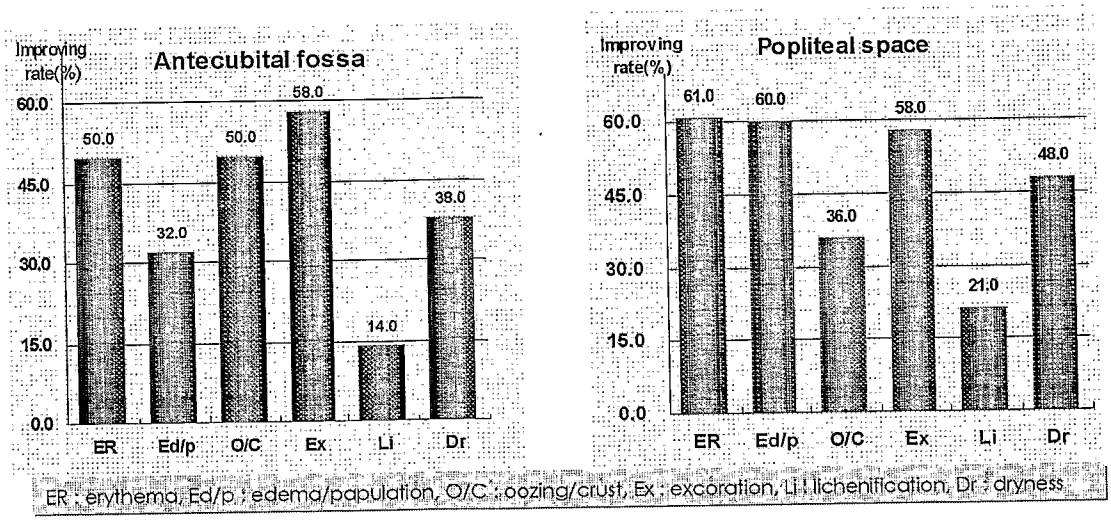
22. The method according to any one of claims 17-20, wherein the Bamboo extract is

ethanol-soluble fraction of hot water extract.

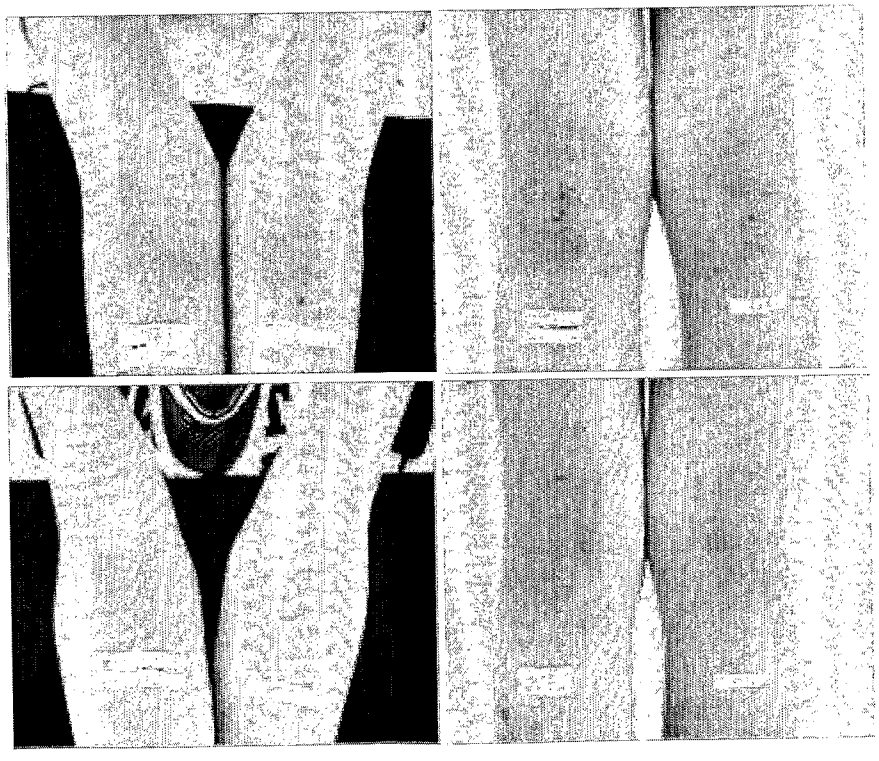
23. The method according to claim 21, wherein the *Scutellaria* extract is extracted with water, methanol, ethanol or a mixture thereof.

24. The method according to claim 22, wherein the *Scutellaria* extract is extracted with water, methanol, ethanol or a mixture thereof.

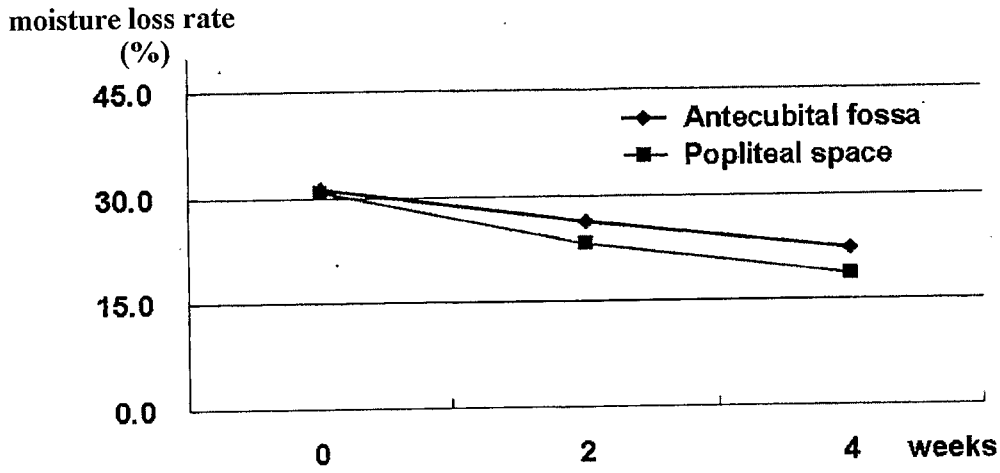
[Fig. 1]


Improving rate(%)
Antecubital fossa
60.0
45.0
30.0
15.0
0.0
50.0
32.0
50.0
58.0
14.0
38.0
ER
Ed/p
O/C
Ex
Li
Dr
Improving rate(%)
Popliteal space
61.0
60.0
36.0
58.0
21.0
48.0
ER : erythema, Ed/p : edema/papulation, O/C : oozing/crust, Ex : excoration, Li : lichenification, Dr : dryness

[Fig. 2]



[Fig. 3]


moisture loss rate
(%)
45.0
30.0
15.0
0.0
Antecubital fossa
Popliteal space
0
2
4
weeks

INTERNATIONAL SEARCH REPORT

International application No.
PCT/KR 2007/005004

A. CLASSIFICATION OF SUBJECT MATTER

IPC[8]: ***A61K 36/899*** (2006.01); ***A61K 36/539*** (2006.01)

According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)

IPC[8]: A61K

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practicable, search terms used)

WPI, EPODOC, TXTE, NPL, embase, medline, tcm, xpesp

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	KR 2002/013675 A (MS KOREA CO LTD) 21 February 2002 (21.02.2002) *abstract (WPI; Acc.No.: 2002-563562); online-translation of KIPO, paragraph [75]* --	1-24
X	JP 2000/044481 A (SUNSTAR INC.) 15 February 2000 (15.02.2000) *abstract; online-translation of JPO* --	1-24
A	EP 296625 A2 (KABUSHIKI KAISHA VITAMIN KENKYUSHO) 28 December 1988 (28.12.1988) *abstract* --	1-24

☒ Further documents are listed in the continuation of Box C. ☒ See patent family annex.

* Special categories of cited documents:
"A" document defining the general state of the art which is not considered to be of particular relevance
"E" earlier application or patent but published on or after the international filing date
"L" document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified)
"O" document referring to an oral disclosure, use, exhibition or other means
"P" document published prior to the international filing date but later than the priority date claimed
"T" later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention
"X" document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone
"Y" document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art
"&" document member of the same patent family

Date of the actual completion of the international search	Date of mailing of the international search report
15 January 2008 (15.01.2008)	13 February 2008 (13.02.2008)

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C (Continuation). DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
A	CN 1057196 A (Chengdu Traditional Chinese Medical College) 25 December 1991 (25.12.1991) *abstract*	1-24

International application No.
PCT/KR 2007/005004

Continuation of first sheet

Continuation No. II:

Observations where certain claims were found unsearchable

(Continuation of item 2 of first sheet)

This international search report has not been established in respect of certain claims under Article 17(2)(a) for the following reasons:

Claims Nos.: 17-24 because they relate to subject matter not required to be searched by this Authority, namely:

Although claims 17-24 refer to a method of treatment of the human/animal body by therapy, a search has been carried out on the alleged effects of the composition.

INTERNATIONAL SEARCH REPORT

Information on patent family members

International application No.
PCT/KR2007/005004

Patent document cited in search report	Publication date	Patent family member(s)	Publication date
KR A 20020013675		KR A 20020013675	2002-02-21
JP A 2000044481		JP A 2000044481	2000-02-15
EP A 296625		EP A2 0296625	1988-12-28
		US A 4987150	1991-01-22
		CA C 1308661	1992-10-13
		JP A 1287081	1989-11-17
		JP A 1104011	1989-04-21
		JP A 64003126	1989-01-06
CN A 1057196		CN A 1057196	1991-12-25