

(51) International Patent Classification:
A61K 36/489 (2006.01) *A61P 17/00* (2006.01)(21) International Application Number:
PCT/KR2010/002055(22) International Filing Date:
2 April 2010 (02.04.2010)

(25) Filing Language: English

(26) Publication Language: English

(30) Priority Data:
10-2010-0017311
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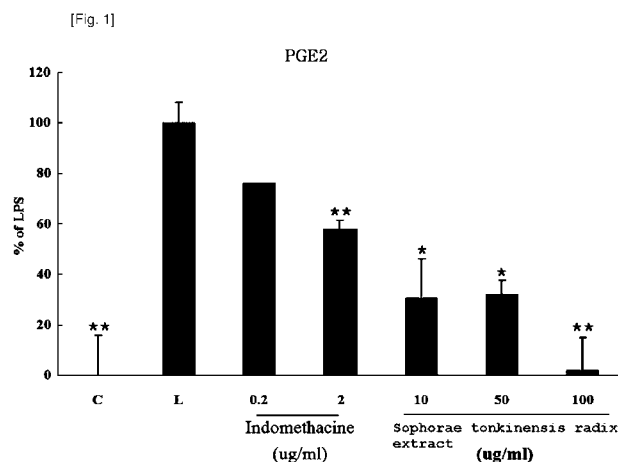
(81) Designated States (unless otherwise indicated, for every kind of national protection available): AE, AG, AL, AM, AO, AT, AU, AZ, BA, BB, BG, BH, BR, BW, BY, BZ, CA, CH, CL, CN, CO, CR, CU, CZ, DE, DK, DM, DO, DZ, EC, EE, EG, ES, FI, GB, GD, GE, GH, GM, GT, HN, HR, HU, ID, IL, IN, IS, JP, KE, KG, KM, KN, KP, KZ, LA, LC, LK, LR, LS, LT, LU, LY, MA, MD, ME, MG, MK, MN, MW, MX, MY, MZ, NA, NG, NI, NO, NZ, OM, PE, PG, PH, PL, PT, RO, RS, RU, SC, SD, SE, SG, SK, SL, SM, ST, SV, SY, TH, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VC, VN, ZA, ZM, ZW.

(84) Designated States (unless otherwise indicated, for every kind of regional protection available): ARIPO (BW, GH, GM, KE, LR, LS, MW, MZ, NA, SD, SL, SZ, TZ, UG, ZM, ZW), Eurasian (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM), European (AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HR, HU, IE, IS, IT, LT, LU, LV, MC, MK, MT, NL, NO, PL, PT, RO, SE, SI, SK, SM, TR), OAPI (BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG).

Published:

— with international search report (Art. 21(3))

(54) Title: COMPOSITION FOR THE PREVENTION OR TREATMENT OF ATOPIC DISEASES COMPRISING EXTRACT OF SOPHORAE TONKINENSIS RADIX AS ACTIVE INGREDIENT AND METHOD FOR PREPARATION OF THE SAME



(57) Abstract: The present invention relates to a composition for the prevention or treatment of atopic diseases, comprising an extract of sophorae tonkinensis radix as an active ingredient, and to a preparation method thereof. The sophorae tonkinensis radix extract of the present invention can be effectively used for the prevention or treatment of atopic diseases. Therefore, the sophorae tonkinensis radix extract can be applied to various fields including a pharmaceutical, food or cosmetic composition for the prevention or treatment of atopic diseases.

Description

Title of Invention: COMPOSITION FOR THE PREVENTION OR TREATMENT OF ATOPIC DISEASES COMPRISING EXTRACT OF SOPHORAE TONKINENSIS RADIX AS ACTIVE INGREDIENT AND METHOD FOR PREPARATION OF THE SAME

Technical Field

- [1] The present invention relates to a composition for the prevention or treatment of atopic diseases, comprising an extract of sophorae tonkinensis radix as an active ingredient, and to a preparation method thereof.

[2]

Background Art

- [3] Atopic diseases are diseases caused by a defect of a stratum corneum, which is a protective wall located in the outermost part of the skin, due to hereditary, environmental, or immunological factors. Allergic disorders associated with atopic diseases include allergic dermatitis, allergic rhinitis, asthma, allergic conjunctivitis, atopic urticaria or the like, and these diseases may occur alone or together with other diseases.

[4]

- [5] The pathogenesis of atopic diseases is not completely understood, but thought to involve immunological and non-immunological mechanisms in addition to hereditary factors. Extrinsic atopic dermatitis accounts for most cases of atopic dermatitis, and is caused by IgE-associated immune responses. There are many reports that extrinsic atopic dermatitis is attributed to a delayed immune response to abnormal T-cell rather than an immediate immune response to a specific allergen. Recently, it has been also reported that atopic diseases are caused by Th2-type cytokines, such as IL-4 inducing IgE production of B cells (JS Kang et al., Inhibition of atopic dermatitis by topical application of silymarin in NC/Nga mice. Intl Immunopharm. (2008) 8. 1475-1480).

[6]

- [7] In general, the severity of atopic diseases is evaluated by the level of "TARC (thymus and activation-regulated chemokine)" which induces and exacerbates symptoms. TARC is a protein belonging to the CC chemokine family and consisting of 71 amino acid residues, and produced by a number of cellular sources, including PBMCs (peripheral blood mononuclear cells), monocytes, macrophages, thymic cells, dendritic cells, endothelial cells, and human bronchial cells, so that TARC induces chemotaxis in certain human T cell lines. In addition, TARC induces integrin-

dependent adhesion of memory T cells, and TARC has also been found to affect shape change of platelets, adhesion to collagen or fibrinogen, aggregation, and calcium influx. TARC production is induced or increased by a variety of stimuli in the stratum corneum of atopic dermatitis, and the produced TARC recruits Th2 cells to the lesion, so as to amplify the allergic reaction. Consequently, atopic dermatitis is developed and the symptoms are exacerbated (YR Pokhare et al., *Sopungyangjae-Tang Inhibits Development of Dermatitis in NC/Nga Mice*. *eCAM* (2008) 5(2) 179-180).

[8]

[9]

Meanwhile, *sophorae tonkinensis radix* is one of medicinal herbs known in oriental medicine, and it is known to have anti-inflammatory, antipyretic, liver-protecting, anticancer, antiulcerative, antiarrhythmic, and antifungal actions. In this connection, Korean Patent Publication No. 10-2006-0037120 discloses the efficacy of *sophorae tonkinensis radix* extract on respiratory diseases, Korean Patent Publication No. 10-2006-0037120 discloses the efficacy of *sophorae tonkinensis radix* extract on osteoporosis, and US patent No. 7,381,429 discloses use of extracts of *Sophora* species for pathological conditions caused by hormone deficiency. However, there have been no descriptions of *sophorae tonkinensis radix* extract in relation to its effect on atopic diseases.

[10]

[11]

Disclosure of Invention

Technical Problem

[12]

Therefore, the present inventors have studied extracts of various medicinal herbs. Unlike the known efficacies of *sophorae tonkinensis radix*, its extract is found to show prophylactic and therapeutic effects on atopic diseases in *in vitro* and *in vivo* experiments, thereby completing the present invention.

[13]

Solution to Problem

[14]

It is an object of the present invention to provide a composition for the prevention or treatment of atopic diseases, comprising an extract of *sophorae tonkinensis radix* as an active ingredient.

[15]

Further, it is another object of the present invention to provide a pharmaceutical composition, a food composition, or a cosmetic composition, comprising the composition as an active ingredient.

[16]

Furthermore, it is still another object of the present invention to provide a method for preparing the composition for the prevention or treatment of atopic diseases comprising an extract of *sophorae tonkinensis radix* as an active ingredient.

[17]

Advantageous Effects of Invention

[18] The sophorae tonkinensis radix extract of the present invention can be effectively used for the prevention or treatment of atopic diseases. Therefore, the sophorae tonkinensis radix extract can be applied to various fields including a prophylactic and therapeutic composition for atopic diseases.

[19]

Brief Description of Drawings

[20] FIG. 1 shows the result of measuring prostaglandin E2 (PGE2) production;

[21] FIG. 2 shows the result of measuring nitric oxide (NO) production;

[22] FIG. 3 shows the result of measuring human TARC production;

[23] FIG. 4 shows the result of photographing NC/Nga mice with atopic disease (visual assessment), after treatment with a sophorae tonkinensis radix extract and a control drug;

[24] FIG. 5 shows the result of performing sensory assessment on NC/Nga mice with atopic disease according to EASI, after treatment with a sophorae tonkinensis radix extract and a control drug;

[25] FIG. 6 shows the result of tissue biopsy of NC/Nga mice, after treatment with a sophorae tonkinensis radix extract and a control drug, in which the left photograph is the result of tissue biopsy of the ear skin, and the right photograph is the result of tissue biopsy of the back skin;

[26] FIG. 7 shows the result of measuring a serum IgE level, after treatment with a sophorae tonkinensis radix extract and a control drug; and

[27] FIG. 8 shows the result of measuring a histamine level, after treatment with a sophorae tonkinensis radix extract and a control drug.

[28]

Best Mode for Carrying out the Invention

[29] In order to achieve the above objects, the present invention provides a composition for the prevention or treatment of atopic diseases, comprising an extract of sophorae tonkinensis radix as an active ingredient.

[30]

[31] As used herein, the term “sophorae tonkinensis radix” means the root and rootstock of *Sophora subprostrata* CHUN et T. CHEN which is a small shrub belonging to the family Leguminosae.

[32] The sophorae tonkinensis radix is known to taste bitter, and have a cold nature and efficacies of clearing away heat and toxic materials, and reducing swelling and relieving sore throat. In oriental medicine, it is also known to have anti-inflammatory,

antipyretic, liver-protecting, anticancer, antiulcerative, antiarrhythmic, and antifungal actions. In addition, the *sophorae tonkinensis* radix contains the ingredients of alkaloids, flavonoids, caffeic acid derivatives and the like. However, there have been no reports of the efficacy of *sophorae tonkinensis* radix on atopic diseases.

[33]

[34] As used herein, the term “extract” means a specific ingredient that is separated from *sophorae tonkinensis* radix using a liquid solvent. Water, C1 to C4 alcohols or mixed solvents thereof may be used as the solvent. To effectively extract active ingredients, the extraction is preferably performed using methanol, ethanol, water, or mixtures thereof. The concentrations of methanol and ethanol are preferably 10 to 90%, more preferably 50 to 70%, but are not limited thereto.

[35]

[36] As used herein, the term “atopic disease” means a chronic relapsing inflammatory skin disease characterized by intense pruritus, dry skin, and eczema. The *sophorae tonkinensis* radix extract according to the present invention can be used for the prevention or treatment of these diseases.

[37]

As used herein, the term “prevention” means all of the actions in which the occurrence of atopic diseases is restrained or retarded by the administration of the pharmaceutical composition containing the *sophorae tonkinensis* radix extract. As used herein, the term “treatment” means all of the actions in which atopic diseases have taken a turn for the better or been modified favorably by the administration of the pharmaceutical composition containing the *sophorae tonkinensis* radix extract.

[38]

[39] Further, the present invention provides a pharmaceutical composition comprising the *sophorae tonkinensis* radix extract as an active ingredient.

[40]

The pharmaceutical composition may be formulated into oral formulations such as powder, granule, tablet, capsule, suspension, emulsion, syrup, and aerosol, external preparation, suppository or sterilized solution for injection according to the typical method. The pharmaceutical composition may further include carriers, excipients and diluents which are typically used in the preparation of compositions.

[41]

[42] Further, the present invention provides a food composition comprising the *sophorae tonkinensis* radix extract as an active ingredient.

[43]

The food composition may contain various nutrients, vitamins, minerals (electrolytes), flavors such as synthetic flavors and natural flavors, coloring matter and enhancer (cheese, chocolate), pectic acid and its salts, alginic acid and its salts, organic acids, protective colloid thickeners, pH control agents, stabilizers, preservatives, glycerins, alcohols, and carbonating agents for carbonated beverage use. In addition,

the food composition may contain natural fruit juices and fruit pulps for the provision of fruit juice drinks and vegetable drinks. These ingredients can be used independently or in combination.

[44] In addition, the food composition may be any one form of meat, sausage, bakery, chocolate, candy, snack, cookie, pizza, instant noodle, chewing gum, ice-cream, soup, beverage, tea, functional water, drink, alcoholic beverages and vitamin complex.

[45] The food composition may be used for the prevention or improvement of atopic diseases.

[46]

[47] Further, the present invention provides a cosmetic composition comprising the *sophorae tonkinensis* radix extract as an active ingredient.

[48] The cosmetic composition to be prepared using the composition of the present invention may be, its formulation is not particularly limited, for example, a toner, a nutrient lotion, a nutrient cream, a massage cream, an essence, a pack or the like. Further, each formulation may be blended with other ingredients depending on the formulation of cosmetic or purpose, together with the *sophorae tonkinensis* radix extract.

[49] Other ingredients blended in the cosmetic composition of the present invention may include oil ingredient, humectants, emollients, surfactants, organic or inorganic dye, organic powder, antioxidants, pH controller, alcohol, pigments, perfumes, or the like. The oil ingredient may include ester oil, hydrocarbon oil, silicone oil, fluoride oil, animal oil, plant oil and the like. The humectants may include water-soluble low molecular humectants, lipophilic low molecular humectants, water-soluble polymer humectants, lipid soluble polymer humectants and the like. The emollients may include long chain acyl glutamic acid cholesteryl ester, cholesteryl hydroxy stearic acid, 12-hydroxy stearic acid, stearic acid, roic acid, lanolin fatty acid cholesteryl ester and the like. The surfactants may include nonionic surfactants, anionic surfactants, cationic surfactants, ambivalent surfactants and the like. The alcohol may include cetearyl alcohol and the like.

[50] The cosmetic composition may be used for the prevention or improvement of atopic diseases.

[51]

[52] Further, the present invention provides a method for preparing a composition for the prevention or treatment of atopic diseases comprising an extract of *sophorae tonkinensis* radix as an active ingredient, comprising the steps of extracting *sophorae tonkinensis* radix using an extraction solvent to prepare a liquid extract; and drying the liquid extract.

[53]

[54] As the solvent, water, or C1 to C4 alcohols or mixtures thereof may be used. In order

to effectively extract the active ingredients, methanol, ethanol or butanol is preferably used. Among them, 70% ethanol and methanol are preferred.

[55]

Mode for the Invention

[56] Hereinafter, a better understanding of the present invention may be obtained through the following Examples which are set forth to illustrate, but are not to be construed as the limit of the present invention.

[57]

Example 1: Preparation of sophorae tonkinensis radix extract

[58] 50 g of sophorae tonkinensis radix (product of Korea, H-MAX) was taken and extracted using a 10-fold volume (w/v) of extraction solvent (70% ethanol) to prepare a liquid extract. The liquid extract was concentrated, and then freeze-dried to prepare an extract (11.715 g). The extraction yield is shown in the following Table 1.

[60] Table 1

[Table 1]

[Table]

Extraction solvent	Method	Yield (%)
70% Ethanol	Sonication 90 min × 3 times	23.46%

[61]

Experimental Example 1: Cytotoxicity test

[62] In order to examine cytotoxicity of the sophorae tonkinensis radix extract prepared in Example 1, the following experiment was performed.

[63] First, Murin macrophage Raw 264.7 cell of 3×10^3 cells/well and the human keratinocyte cell line, HaCaT cell of 1×10^3 cells/well were aliquoted to 96 well plates, and then treated with the sophorae tonkinensis radix extract prepared in Example 1 at a concentration of $1 \times 10^{-3} \sim 1 \times 100$ mg/ml.

[65]

[66] Next, after 24 hr cultivation, the tetrazolium salt, CCK-8 kit (Cell Counting Kit-8, Dojindo Laboratories, Tokyo, Japan) solution was added, and the cells were cultured for 4 hrs. Absorbance was measured at 450 nm using an ELISA reader (Ceres UV 900C, Bio-tech instrument, U.S.A.). A ratio of the absorbance of the Drug-treated well to the absorbance of the Control well was expressed as a percentage, and an average value from several wells was used. The calculation was based on the following equation.

[67]

[68] $\% = \{(\text{Mean Abs450nm value of Drug-treated wells}) - (\text{Mean Abs450nm value of Blank well})\} / \{(\text{Mean Abs450nm value of Control well}) - (\text{Mean Abs450nm value of Blank well})\} \times 100$

[69]

[70] As a result, when murin macrophage Raw 264.7 cells were treated with 100 $\mu\text{g/ml}$ of the sophorae tonkinensis radix extract, the value was $126.45 \pm 4.76\%$. Upon further anti-inflammatory test, the cells were treated to a concentration of 100 $\mu\text{g/ml}$. When human Keratinocyte, HaCaT cells were treated with 50 $\mu\text{g/ml}$ of the sophorae tonkinensis radix extract, the value was $91.62 \pm 0.54\%$. Upon further activity test using the HaCaT cell, the cells were treated to a concentration of 50 $\mu\text{g/ml}$.

[71]

[72] **Experimental Example 2: Test on anti-inflammatory effect**

[73]

[74] (1) Measurement of Prostaglandin E2 (PGE2) production

[75] In order to examine anti-inflammatory effect of the sophorae tonkinensis radix extract prepared in Example 1, the following experiment was performed. In relation to inflammation, increased cyclooxygenase (COX) activity was assessed by measuring the production of PGE2 which is a product of COX. Reduction in PGE2 production by the sample treatment was regarded as inhibition of COX activity, and its anti-inflammatory effect was assessed.

[76]

[77] First, Raw 264.7 cells were aliquoted to 48 well plates. The aliquoted cells were cultured in a CO2 incubator for 16 hrs to be adhered to the bottom. A negative control was treated with a medium only, and a positive control and a drug-treated group were treated with LPS at a concentration of 1 $\mu\text{g/ml}$. As the positive control, indomethacine (Sigma Chemical Co, MO, U.S.A.) was used. The drug-treated group was treated with sophorae tonkinensis radix extract at various concentrations. All of the wells were treated with DMSO to a final concentration of 1%.

[78] Next, after 18 hr cultivation, the cells were treated with arachidonic acid to a final concentration of 30 μM , and then the supernatant was separated, followed by measurement of PGE2 production. PGE2 level was assessed in accordance with Prostaglandin E2 Biotrak Enzymeimmunoassay (EIA) System (Amersham Biosciences, UK), and absorbance was measured at 450 nm. The results are, expressed as Mean $\pm$ S.E.M. (standard error of mean), shown in FIG. 1. The resulting data were analyzed by one-way ANOVA using a SYSTAT program. For further analysis, a Bonferroni multiple comparison test was used to assess the differences between the groups. A level of $P < 0.05$ was considered statistically significant, and *, $p < 0.05$, **, $p < 0.01$ were expressed as compared with LPS.

[79]

[80] As shown in FIG. 1, it was found that PGE2 production was decreased by the positive control, indomethacine in a concentration-dependent manner. When the sophorae tonkinensis radix extract were treated at various concentrations, it exhibited more excellent inhibitory effect on PGE2 production than the positive control. In particular, the group treated with the sophorae tonkinensis radix extract of 100 $\mu\text{g/ml}$ (3.82 ± 0.71 ng/ml) showed about 98% inhibition, relative to the LPS-treated group (9.20 ± 0.45 ng/ml) which is an induced group.

[81]

[82] (2) Measurement of Nitric oxide (NO) production

[83] In order to examine anti-inflammatory effect of the sophorae tonkinensis radix extract prepared in Example 1, NO production by activation of Nitric oxide synthase (NOS) was assessed as follows.

[84]

[85] First, Raw 264.7 cells were aliquoted to 48 well plates. The aliquoted cells were cultured in a CO2 incubator for 16 hrs to be adhered to the bottom. A negative control was treated with medium only, and a positive control and a drug-treated group were treated with LPS at a concentration of 1 $\mu\text{g/ml}$. As the positive control, a NOS inhibitor, L-NMMA (Sigma Chemical Co, MO, U.S.A.) was used. The drug-treated group was treated with sophorae tonkinensis radix extract at various concentrations. All of the wells were treated with DMSO to a final concentration of 1%.

[86] Next, after 18 hr cultivation, the supernatant was separated, and a Griess reagent was used to assess NO production. Absorbance was measured at 535 nm. The results are, expressed as Mean $\pm$ S.E.M. (standard error of mean), shown in FIG. 2. The resulting data were analyzed by one-way ANOVA using a SYSTAT program. For further analysis, Bonferroni multiple comparison test was used to assess the differences between the groups. A level of $P < 0.05$ was considered statistically significant, and *; $p < 0.05$, **; $p < 0.01$ were expressed as compared with the LPS-treated group.

[87]

[88] As shown in FIG. 2, when Raw 264.7 cells were treated with 1 $\mu\text{g/ml}$ of LPS (14.22 ± 0.42 μM), NO production was increased by about 70 times or more than a normal group (0.20 ± 0.06 μM). In the positive control, L-NMMA-treated group, NO production was found to be inhibited in a concentration-dependent manner. In the sophorae tonkinensis radix extract-treated groups, NO production was found to be inhibited as much as in the positive control. The group treated with the extract of 100 $\mu\text{g/ml}$ showed about 48% (7.58 ± 0.31 μM) inhibition, relative to the induced group.

[89]

[90] **Experimental Example 3: Changes in expression of atopic disease-related**

factors

- [91] In order to examine effects of the sophorae tonkinensis radix extract prepared in Example 1 on expression of atopic disease-related factors, the following experiment was performed.
- [92] HaCaT cells (1×10^6 cells) were aliquoted to 6 well plates, and then treated with TNF- α and IFN- γ at each concentration of 10 ng/ml. Thereafter, the cells were treated with the sophorae tonkinensis radix extract at concentrations of 12.5, 25, and 50 μ g/ml. As a control, sylimarin and foscoklin were used. After 24 hrs, hTARC in the supernatant was detected by an EIA method. The results are, expressed as Mean $\pm$ S.E.M. (standard error of mean), shown in FIG. 3. The resulting data were analyzed by one-way ANOVA using a SYSTAT program. For further analysis, Bonferroni multiple comparison test was used to assess the differences between the groups. A level of $P < 0.05$ was considered statistically significant, and *, $p < 0.05$, **, $p < 0.01$ were expressed as compared with TNF- α /IFN- γ (TI).
- [93]
- [94] As shown in FIG. 3, the control groups, sylimarin (5.25 ± 0.50 ng/ml) and foscoklin (8.66 ± 0.76 ng/ml)-treated groups showed inhibition rate about 150 times and 140 times more than the induced group, TNF- α /IFN- γ (54.65 ± 1.70 ng/ml). In addition, the sophorae tonkinensis radix extract was found to show inhibition of the hTARC level in a concentration-dependent manner. The sophorae tonkinensis radix extracts of 25 μ g/ml and 50 μ g/ml were found to show inhibition of the hTARC level at a rate of 12% (50.35 ± 2.14 ng/ml) and 110% (17.63 ± 1.17 ng/ml), respectively, indicating an anti-atopic disease mechanism of the extract.
- [95]
- [96] **Experimental Example 4: Therapeutic effect on atopic diseases of NC/Nga mice**
- [97] (1) Induction of atopic disease in NC/Nga mice
- [98] As experimental animals, Male 8-week old NC/Nga mice were supplied from Jung-Ang Lab animal Inc. (Korea), and acclimated for 2 weeks. Biostir®(Japan) prepared from house dust mite was used as an allergen of the present invention. Before initiation of the experiment, the regions around the back and ears of mice were shaved, and Biostir® was applied thereto twice a week for 4 weeks proceeding the experiment. The sophorae tonkinensis radix extract was used in an amount of 5 mg/200 μ l/mouse, and as a control drug, nonsteroidal 0.1% tacrolimus (Protopic Astellas, NY) was applied to the shaved back and ears in an amount of 50 mg/mouse.
- [99]
- [100] (2) Visual and sensory assessments
- [101] After NC/Nga mice with atopic dermatitis were treated with the sophorae tonkinensis radix extract and the control drug, their lesions were photographed (visual assessment),

and sensory assessment was performed by EASI (The eczema area and severity index) which is generally used to measure the severity of atopic dermatitis.

- [102] The severity of dermatitis was assessed macroscopically according to the Eczema Area and Severity Index (EASI) scoring system: 0; no symptoms, 1; mild symptoms, 2; moderate symptoms, and 3; severe symptoms. Dermatitis score was defined as the sum of scores for erythema/hemorrhage, edema, excoriation/erosion and scaling/dryness (Hanifin JM, Thurston M, Omoto M, Cherill R, Tofte SJ, Graeber M. 2001. The eczema area and severity index (EASI) assessment of reliability in atopic dermatitis. *Exp Dermatol.* 10: 11-18).
- [103] The sensory assessment index, EASI was determined by the sum of points. While inducing atopic dermatitis using house dust mite for 4 weeks, photographing and sensory assessment were performed once a week.
- [104]
- [105] To perform photographing (visual assessment), NC/Nga mice were treated with Biostir® prepared from house dust mite, and then photographed for 4 weeks. As a result, in the atopic dermatitis-induced group, skin defects and dryness became severe after 2 weeks, and bleeding cracks after 3 weeks. In the control group, Protopic® ointment (0.1% tacrolimus) did not show therapeutic effects on eschar and skin scraping, as compared to the normal group. Meanwhile, it was observed that the induced atopic disease was ameliorated in the sophorae tonkinensis radix extract-treated group after 3 weeks. The results are shown in FIG. 4.
- [106] In addition, the sensory assessment by EASI is shown in FIG. 4. As shown in FIG. 5, a statistically significant reduction in EASI was found in the sophorae tonkinensis radix extract-treated group,
- [107]
- [108] (3) Tissue biopsy
- [109] After termination of the sensory assessment, biopsies of the ear and back skin were taken and fixed in 10% formalin for histological examination. Skin thickness and histologic changes were examined. The results are shown in FIG. 5.
- [110] As shown in FIG. 6, it was found that skin thickness and histologic changes in the sophorae tonkinensis radix extract-treated group are similar to those in the normal group, as compared to the induced group Biostir® and the control group Protopic®.
- [111]
- [112] (4) Measurement of serum IgE and Histamine production
- [113] The sophorae tonkinensis radix extract of 5 mg/200 µl/mouse was applied to the atopic disease-induced NC/Nga mice for 4 weeks, and then the serum was separated to quantify serum IgE level (ELISA, Bethyl laboratoris, U.S.A), and histamine level (ELISA, Oxford Ltd. U.S.A). The results of serum IgE level and histamine level are,

expressed as Mean±S.E.M. (standard error of mean), shown in FIGs. 7 and 8, respectively. The result data were analyzed by one-way ANOVA using a SYSTAT program. For further analysis, Bonferroni multiple comparison test was used to assess the differences between the groups. A level of $P < 0.05$ was considered statistically significant, and *; $p < 0.05$ was expressed as compared with the induced group, Biostir®.

[114]

[115] As shown in FIG. 7, the atopic disease-induced group showed IgE level three times higher than the negative group. As shown in the visual assessment, reduction in IgE level was not observed in the control group. However, a statistically significant reduction was observed in the sophorae tonkinensis radix extract-treated group, compared to the induced group.

[116] As shown in FIG. 8, a higher histamine level was observed in the induced group, compared to the control group. The sophorae tonkinensis radix extract-treated group did not show any statistical significance, but had an inhibitory tendency on histamine release.

[117]

[118] Consequently, the sophorae tonkinensis radix extract was found to be used as an effective therapeutic agent for atopic diseases.

[119]

[120]

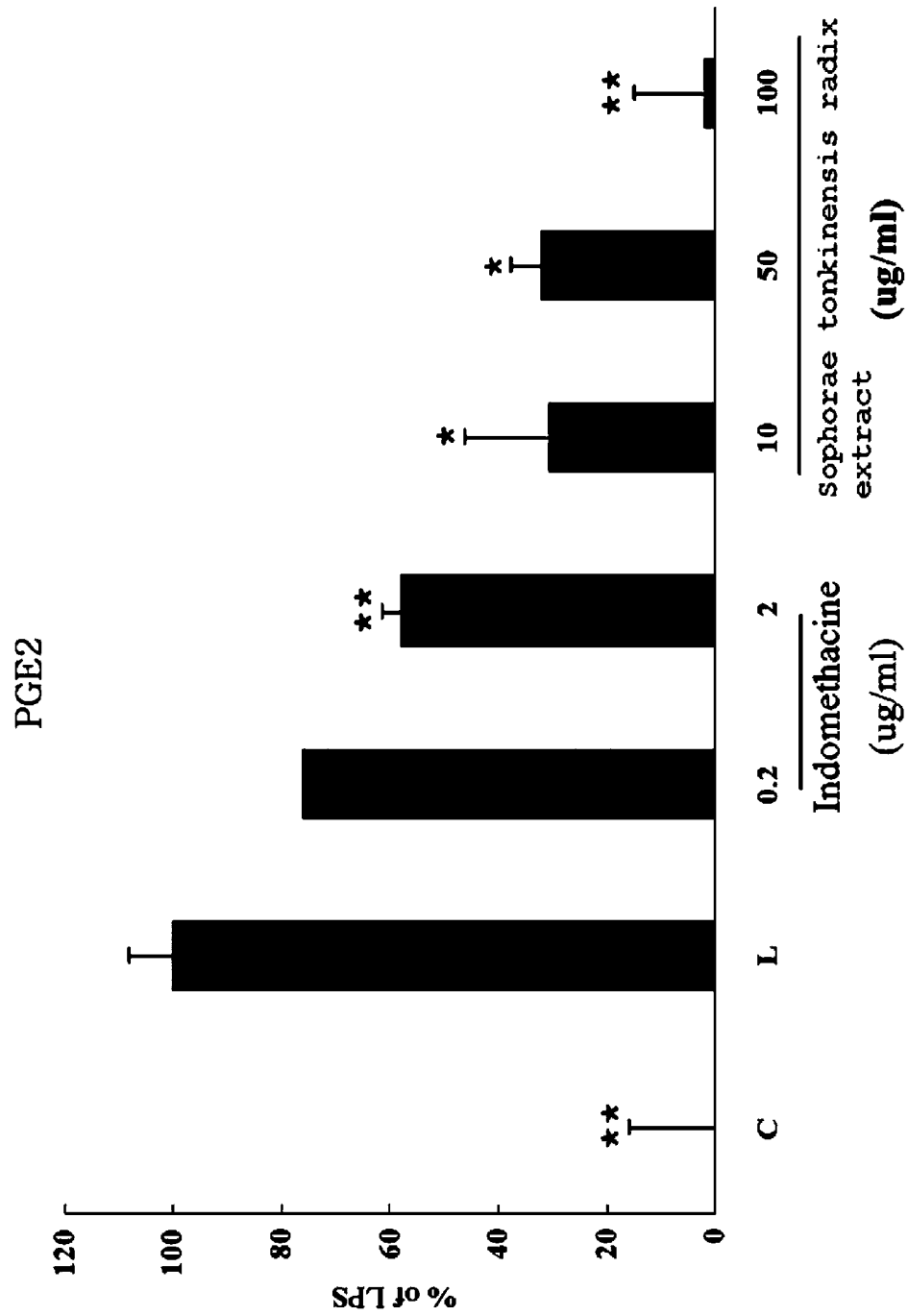
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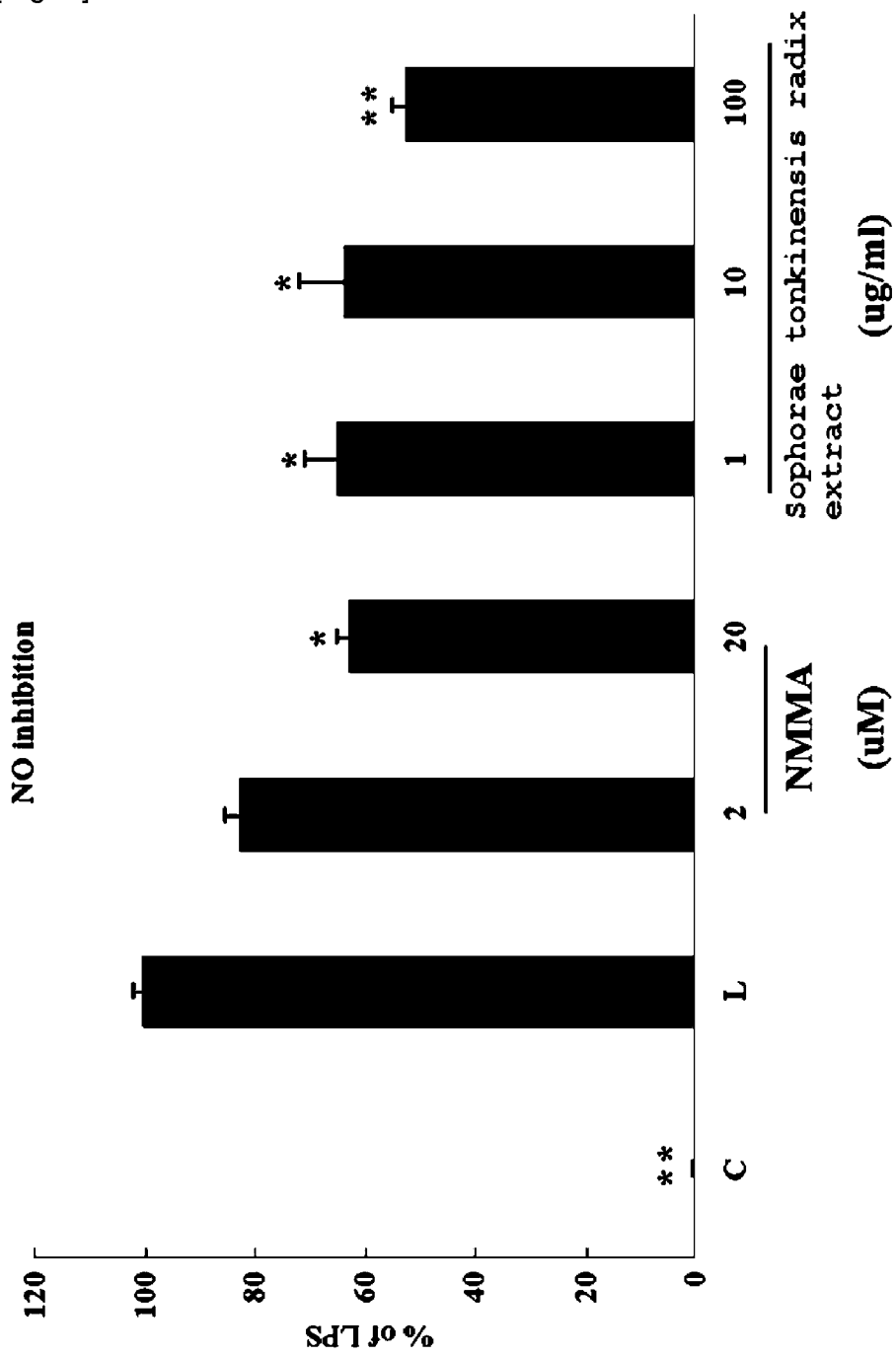
Claims

- [Claim 1] A composition for the prevention or treatment of atopic diseases, comprising an extract of sophorae tonkinensis radix as an active ingredient.
- [Claim 2] The composition according to claim 1, wherein the sophorae tonkinensis radix extract is prepared by extracting sophorae tonkinensis radix using water, C1 to C4 alcohols or mixtures thereof.
- [Claim 3] The composition according to claim 2, wherein the sophorae tonkinensis radix extract is prepared by extraction using methanol or ethanol.
- [Claim 4] A pharmaceutical composition comprising the composition according to any one of claims 1 to 3 as an active ingredient.
- [Claim 5] A food composition for the prevention or improvement of atopic diseases, comprising the composition according to any one of claims 1 to 3 as an active ingredient.
- [Claim 6] A cosmetic composition for the prevention or improvement of atopic diseases, comprising the composition according to any one of claims 1 to 3 as an active ingredient.
- [Claim 7] A method for preparing a composition for the prevention or treatment of atopic diseases comprising an extract of sophorae tonkinensis radix as an active ingredient, comprising the steps of:
extracting sophorae tonkinensis radix using an extraction solvent to prepare a liquid extract; and
drying the liquid extract.
- [Claim 8] The method according to claim 7, wherein the extraction solvent is water, C1 to C4 alcohols or mixtures thereof.
- [Claim 9] The method according to claim 7, wherein the extraction solvent is ethanol or methanol.

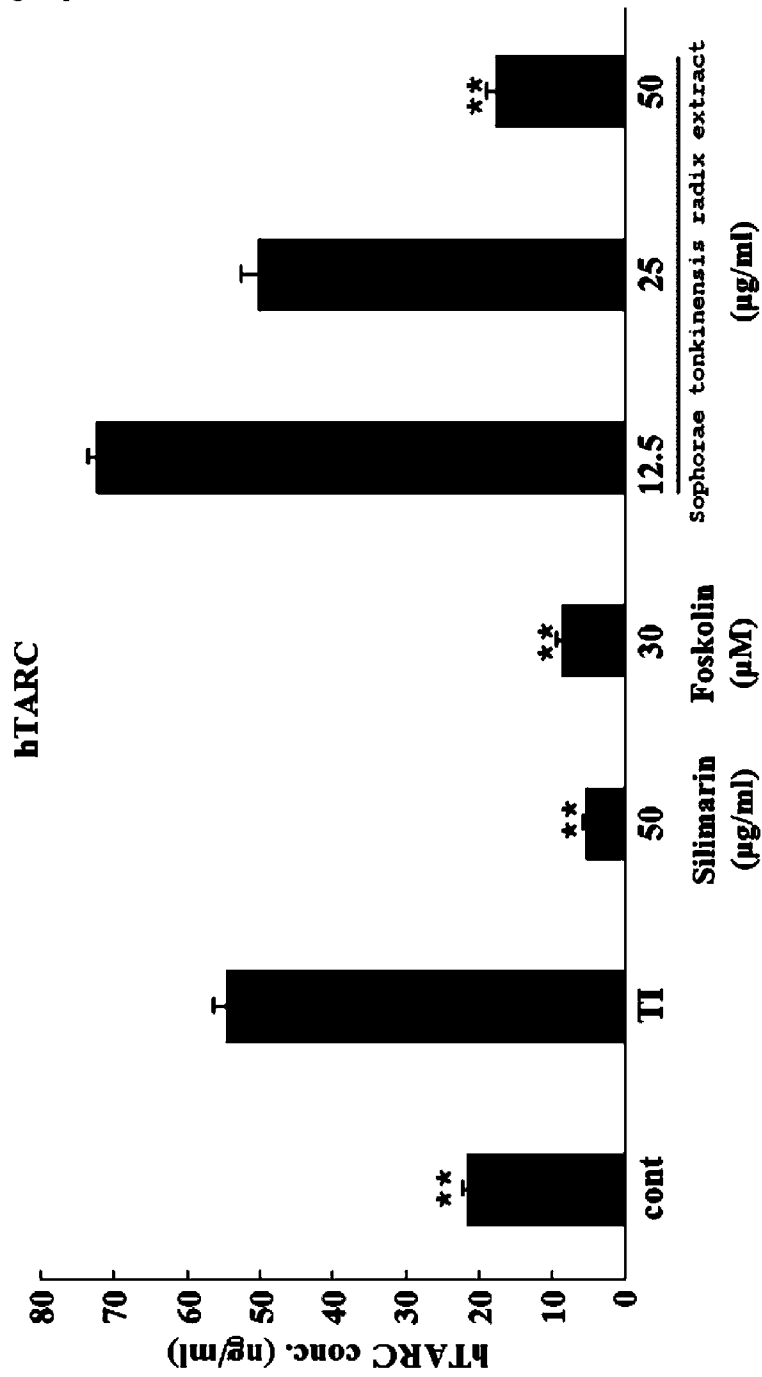
[Fig. 1]



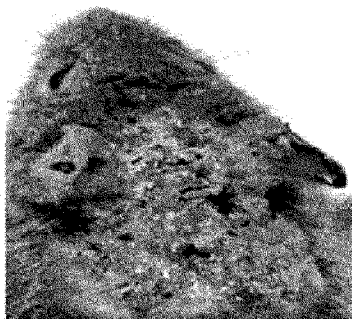
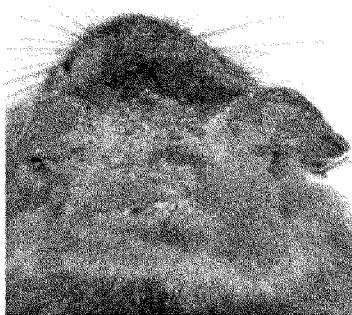
[Fig. 2]



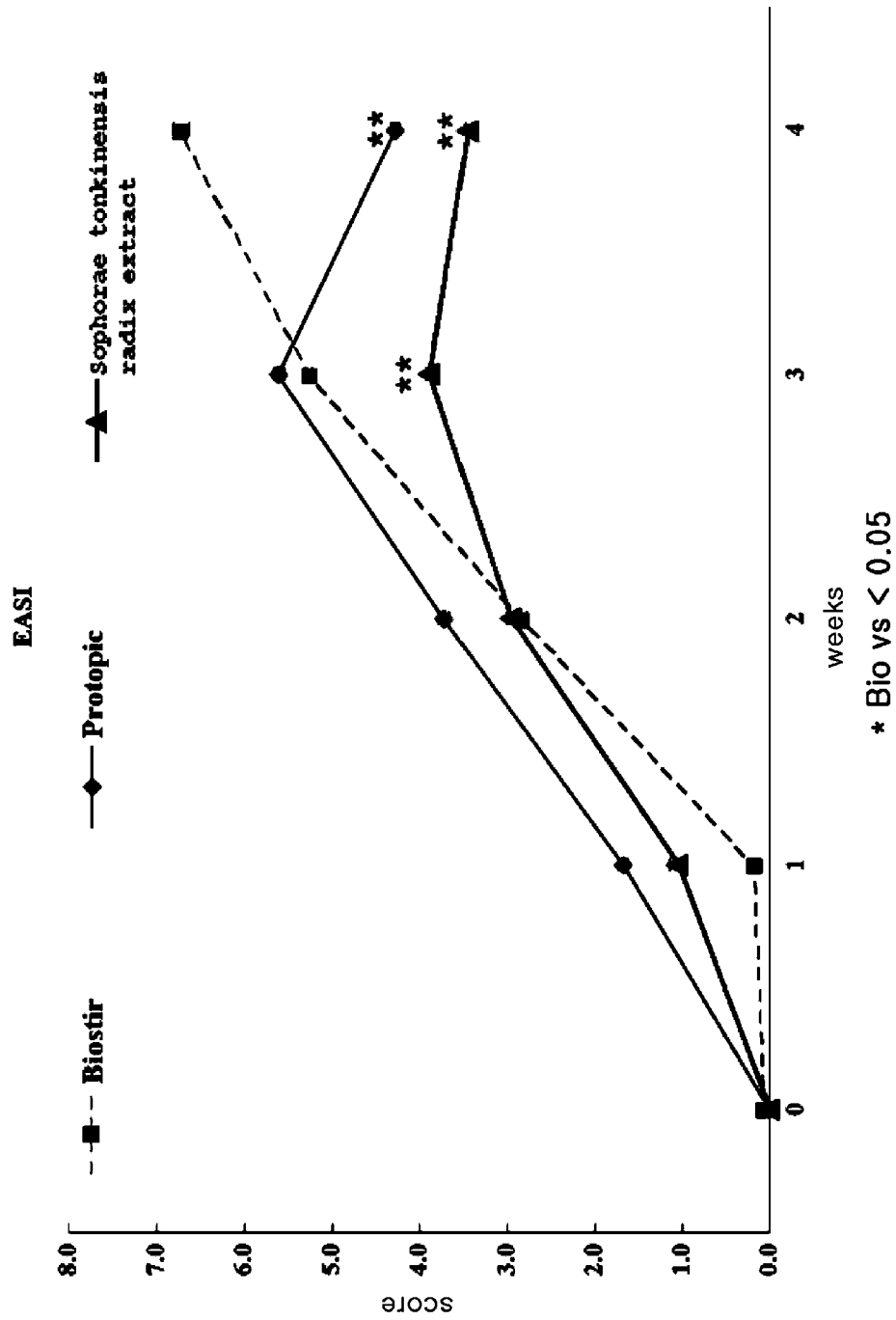
[Fig. 3]



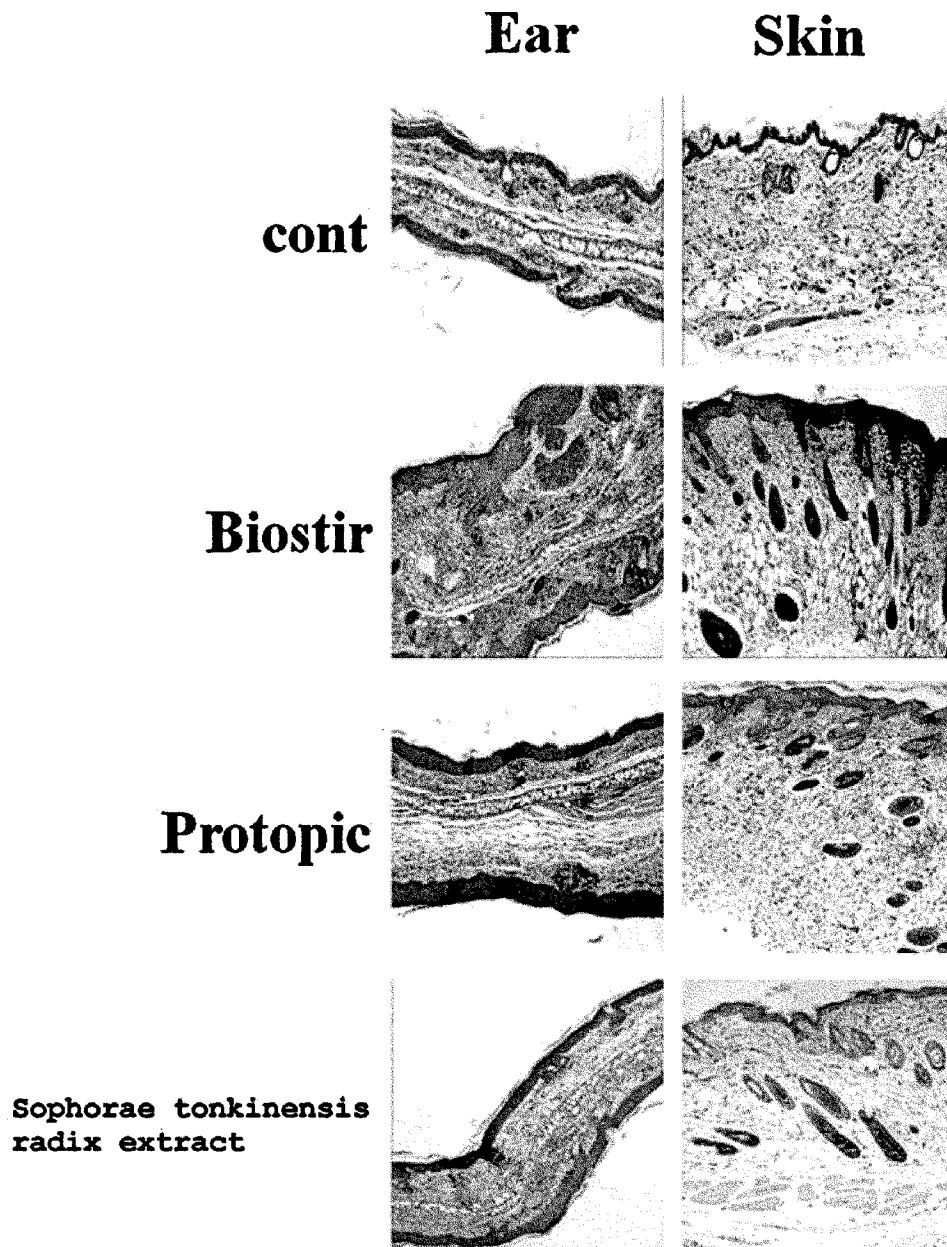
[Fig. 4]

cont**Biostir****Protopic****Sophorae tonkinensis
radix extract**

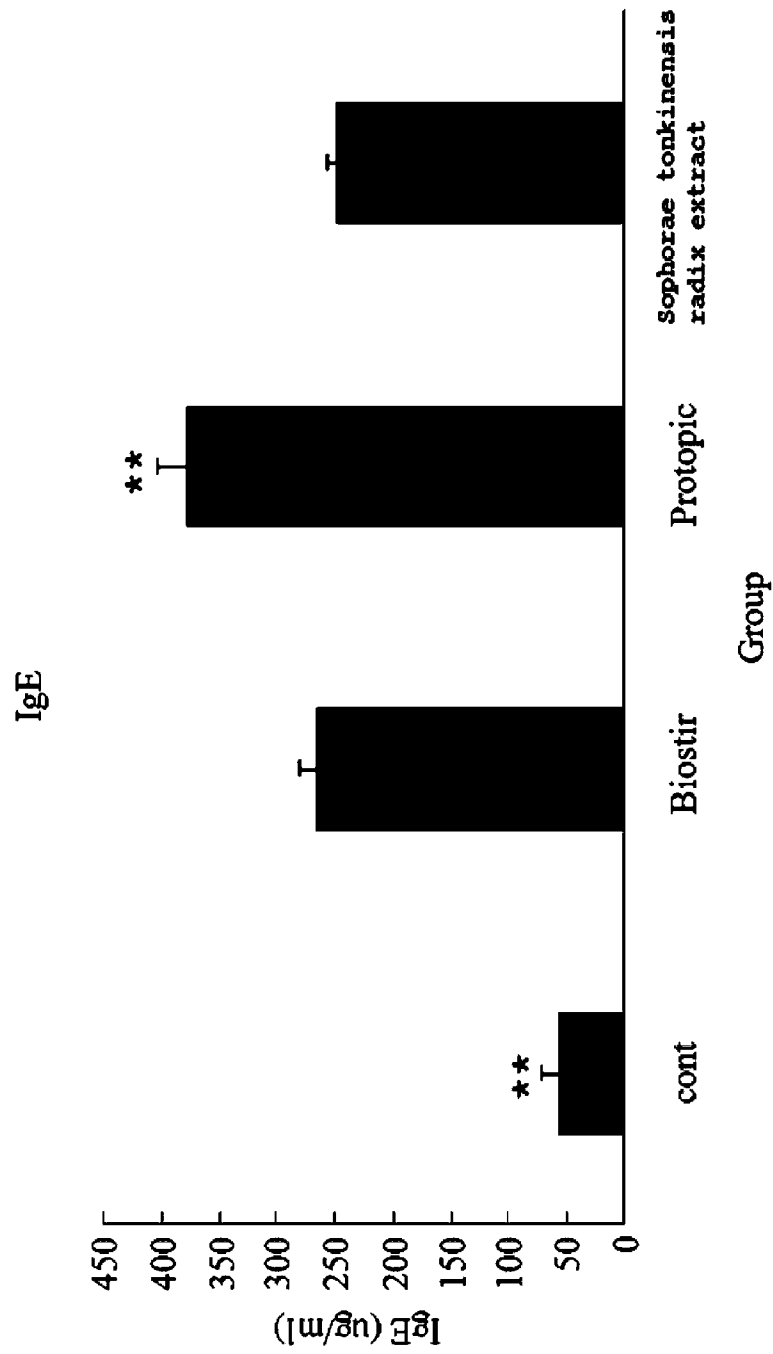
[Fig. 5]



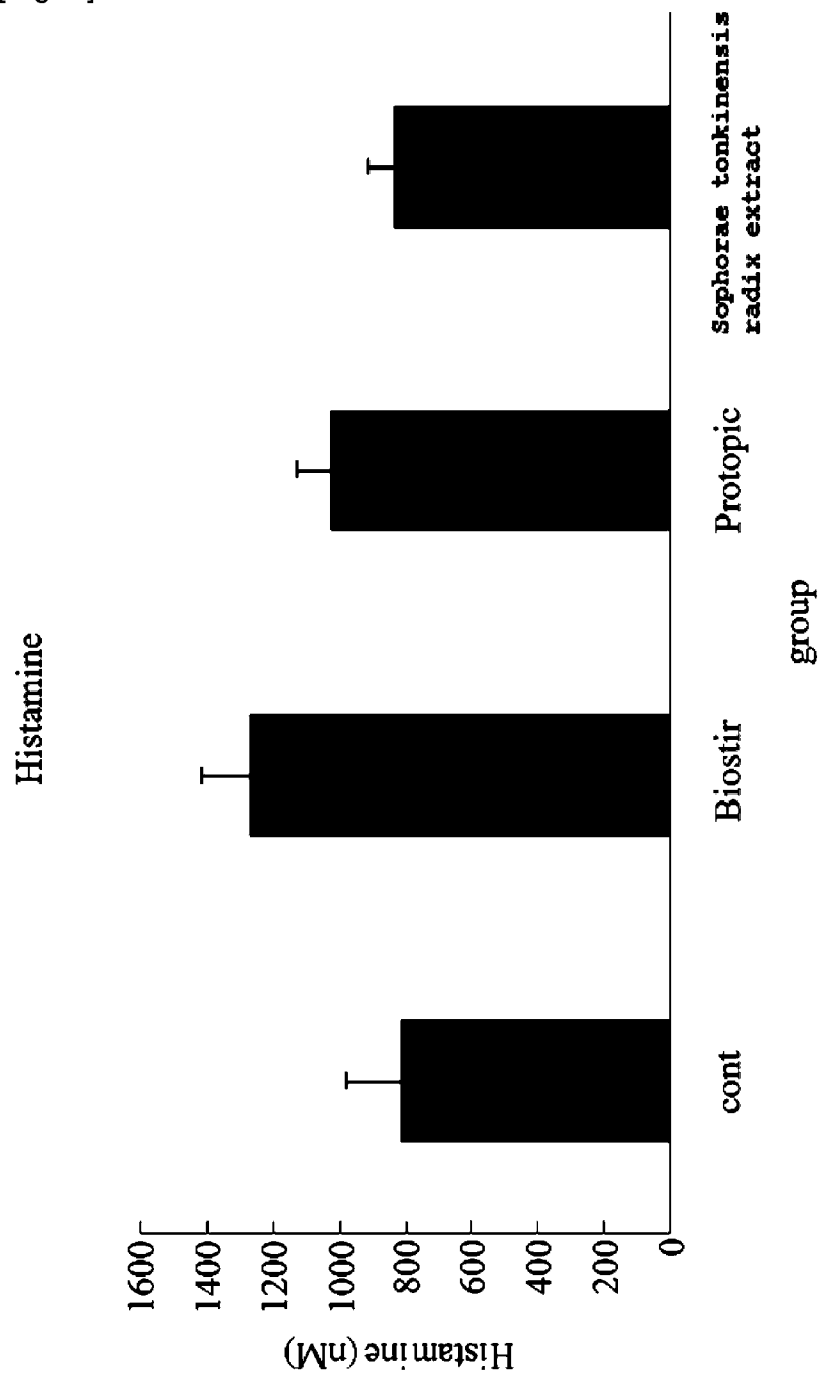
[Fig. 6]



[Fig. 7]



[Fig. 8]



A. CLASSIFICATION OF SUBJECT MATTER***A61K 36/489(2006.01)i, A61P 17/00(2006.01)i***

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)

A61K 36/489; A61P 11/00; A01N 65/00; A61K 36/748; A61K 36/25

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

Korean utility models and applications for utility models

Japanese utility models and applications for utility models

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

eKOMPASS(KIPO internal) & Keywords: "산두근(sophorae tonkinensis radix)", USPTO, EPO, JPO, 인터넷

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
A	KR 10-2006-0037120 A (SK CHEMICALS CO., LTD.) 03 May 2006 See the whole document	1-9
A	KR 10-2007-0087952 A (UNIVERSITY-INDUSTRY COOPERATION GROUP OF KYUNG HEE UNIVERSITY) 29 August 2007 See the whole document	1-9
A	KR 10-0380866 B1 (KOREA INSTITUTE OF ORIENTAL MEDICINE) 18 April 2003 See the whole document	1-9
A	KR 10-0239878 B1 (SAM CHUN DANG PHARM. CO., LTD.) 01 February 2000 See the whole document	1-9
A	US 7381429 B2 (ERDELMEIER CLEMENS et al.) 03 June 2008 See the whole document	1-9



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Date of the actual completion of the international search

13 APRIL 2011 (13.04.2011)

Date of mailing of the international search report

20 APRIL 2011 (20.04.2011)

Name and mailing address of the ISA/KR

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INTERNATIONAL SEARCH REPORT

Information on patent family members

International application No.

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