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SC – Poria

Poria cocos Extract

Name: Poria cocos
Common Name: Hoelen, Fu-Ling
Family: Polyporaceae
Part Used: Sclerotium of the fungus
Composition: lanostane-type triterpenoids
INCI name: Poria cocos Extract

Biological Activity:

Anti-inflammatory

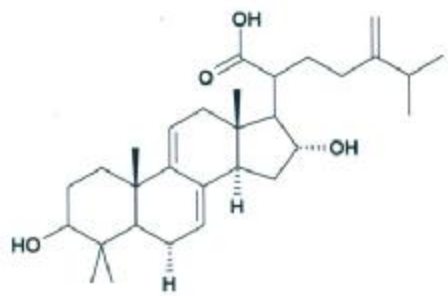
- **inhibits PLA_2**
- **inhibits TNF-α, IL-1, IL-6**
- **inhibits TPA induced edema**

Cosmetic applications:

Anti-inflammatory
Soothing
Decrease redness
Decrease puffiness
Sensitive and Atopic skin

Characteristics:

Beige powder
Soluble in BG with effort



eg, Dehydrotumulosic acid

BACKGROUND

Poria cocos is a fungus in the mushroom family (Polyoporaceae) and has a rich history of use in Traditional Chinese medicine where the crude drug is known as Hoelen or Fu-Ling. The fruiting body (sclerotium) of Poria is folkloricly used for its anti-aging, diuretic, sedative and tonic effects. In total, Poria is the chief ingredient in about 10% of all Traditional Chinese Medicinal formulations. Because of its rich and proven tradition, the scientific community has recently focused on understanding the chemistry and biology responsible for its activities.

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Anti-inflammatory Activities:

Most of the scientific research has focused on the anti-cancer and anti-inflammatory activities of constituents found in Poria. The active compounds isolated from Poria fall into two categories; polysaccharides, and triterpenoids. Early work by Kanayama (1983) and other researchers over the last two decades showed that water extracts of the mycelia and sclerotium contain a series of beta-glucan type polysaccharides with potent antitumor and immuno-modulatory activites. During that same period other researchers have identified a series of lanostane-type triterpenoids with useful anti-inflammatory activity. We have focus on extracting these triterpenoids.

In 1992, Tseng showed that alcoholic extracts of Poria cocos inhibited the release of several cytokines involved in inflammation such as TGF-α, IL-1, IL-6. Later other researchers took a closer look at identifying the constituents, Nukaya (1996) showed that the methanol extract of Poria inhibited phorbol ester (TPA) induced mouse-ear edema and identified 4 lanostane triterpenoids responsible for the activity. During that same year Kaminaga confirmed that these compounds inhibited TPA induced inflammation and also prevented 2 stage carcinogenesis when applied topically. In 1997, Cuella and co-workers showed that Poria cocos extracts effectively inhibited experimentally induced dermatitis and other oral or topical inflammations induced by carrageenan, arachidonic acid, and TPA. Yasukawa later confirmed these results and identified another compound in the same series of tumulosic and pachymic acids. Earlier, Cuella (1996) showed that the lanostane-type triterpenoids of Poria are potent inhibitors of phospholipase A_2. Giner- Larza (2000) and Prieto (2003) compared the various routes of inflammatory activity, ie, inhibition of PKC (via TPA), arachidonic acid induced, 5-lipoxigenase, etc and found that Poria extracts and the individual triterpenoids Most potently inhibited phospholipase A_2 (PLA_2).

In Collaboration with Nanjing Pharmaceutical University, SpecChem has developed a methanol extract of Poria cocos. Through additional extractions, SC-Poria has reduced color and odor problems and optimized anti-inflammatory activities. The typical PLA2 IC50 value for SC-Poria ranges from 17 to 23 ppm thus providing a formulating use-level of 0.1% to 0.2%.

COSMETIC APPLICATIONS:

ANTIINFLAMMATORY:

These results indicate that poria extract is useful for acute and chronic inflammatory conditions. Cosmetic applications include decrease in puffiness, decrease in redness, aid for the relief of atopic or sensitive skin, and for after-sun products.

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OTHERS:

Research by Prieto (2003) show that Poria extracts in inhibit elastase and thus could be used for firming and prevention of pre-mature aging.

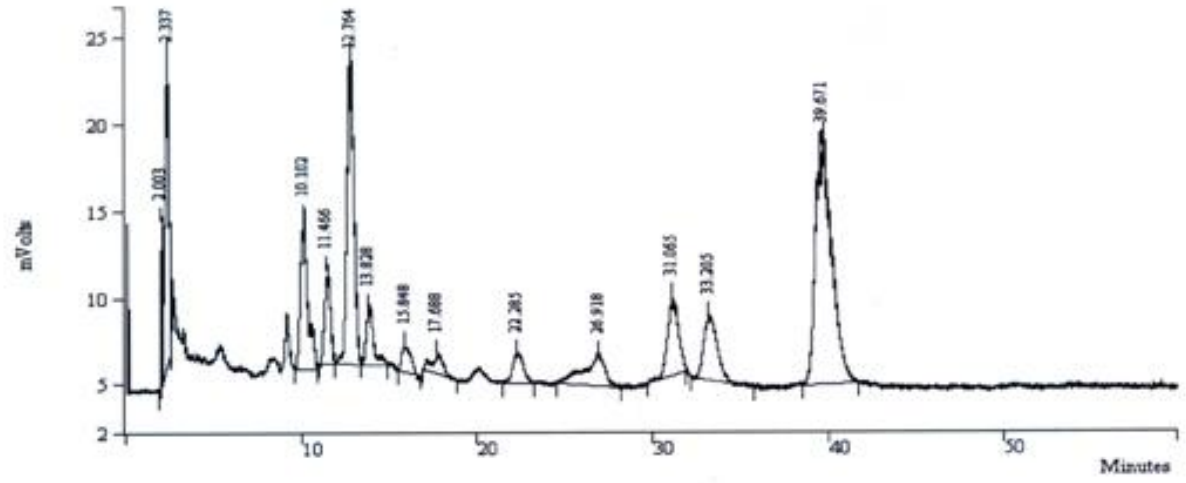
Research by Lin, using a simple screening assay for melanocyte proliferation, identified Poria cocos water extract as being potently active, indicating that some extracts of Poria may be useful in treating vitiligo.

PATENTS:

Meybeck with LVMH have shown that extracts of Poria inhibit 5α-reductase and have gained World, European, and US patents for use in treating acne and preventing oily skin.

HPLC Profile:

Conditions: C-18 column, eluting 80% aqueous MeOH, Detecting 210nm



Anti-inflammatory Activity:

PLA2 inhibition SC-Poria IC50 17 to 23 ppm (typical range)

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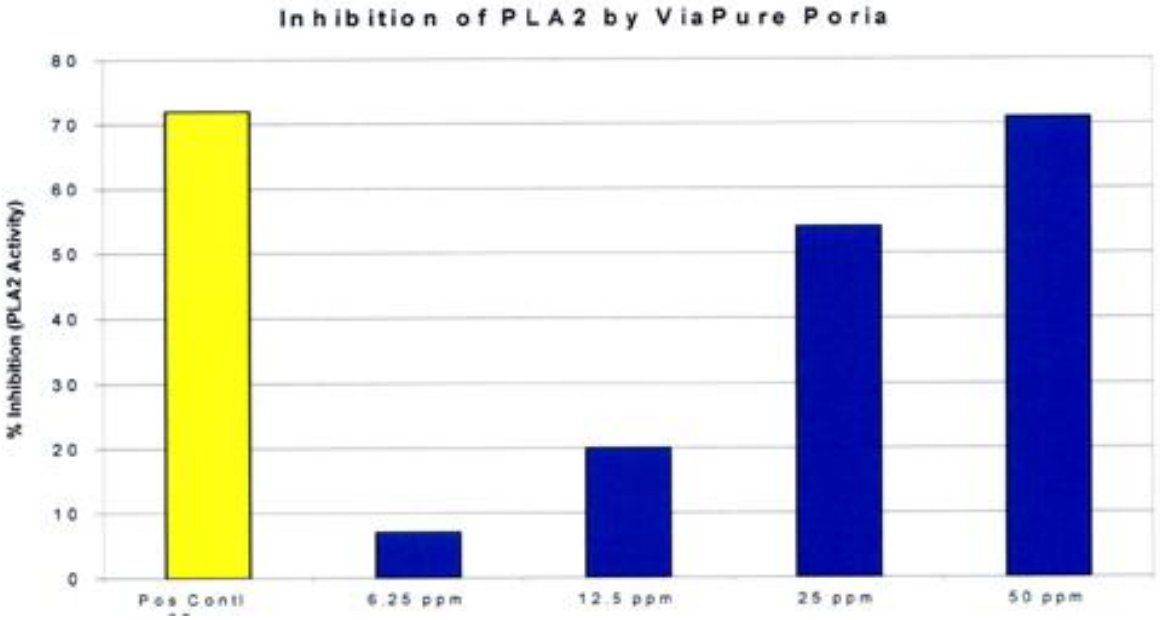

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FORMULATION EXAMPLES

1. Poria Balance Gentle Repairing Cream

Phase	No.	Product name / INCI name	%	Supplier
	1	GP200	3.0	Croda
	2	Cetearyl Alcohol	3.0	Cognis
	3	Glyceryl Stearate	2.8	Cognis
	4	Mineral Oil	2.0	
	5	Isopropyl Myristate	2.0	Cognis

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	6	CETIOL CC	2.0	Cognis
	7	DC-200	0.5	Dow Corning
	8	CM040	1.5	Wacker
	9	α- Bisabolol,	0.2	SC
	10	BHT	0.04	
	11	Propylparaben	0.08	
B	1	Glycerin	5.0	
	2	Xanthan Gum	0.05	SC
	3	Poria Cocos Root Extract（1%）	10.0	SC
	4	Allantion	0.2	
	5	Methylparaben	0.15	
	6	HR-S_1 (potassium cetyl phosphate)	0.5	
	7	NMF-50(Trimethylglycine)	0.5	SC
	8	Deionized Water	To 100	
C	1	Hyaluronic Acid（1%）	1.5	
D	1	IS-45	qs.	ISP
	2	Fragrance	qs.	

Procedure:

1. **Heat and stir ingredients in Phase A (oil phase) to dissolve, control temperature at 80±2℃ (it is suggested that CM040 is added prior to emulsification of water phase and oil phase).**
2. **pre-mix and disperse well 1 and 2 in B phase (water phase), add to water, stir and heat to completely dissolve, stop heat at around 95℃, control temperature at around 85℃ prior to emulsification.**
3. **Suck Oil phase into emulsification vessel, and under constant stirring suck water phase into the vessel, emulsify for 15 minutes.**
4. **Cool to 60℃, increase the speed of scraper blade stirrer, add to the vessel 1 in Phase C; cool to 48℃ and then add 1 and 2 in Phase D, stir well.**
5. **Stop stir when temperature decrease to 45℃.**

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2. Poria Balance Gentle Repairing Milk

Phase	No.	Product Name / INCI Name	%	Supplier
A	1	GP200	2.0	Croda
	2	Cetearyl Alcohol	0.5	Cognis
	3	Glyceryl Stearate	0.5	Cognis
	4	Mineral Oil	1.0	杭州炼油厂
	5	Isopropyl Myristate	1.0	Cognis
	6	CETIOL CC	1.0	Cognis
	7	DC-200	0.5	Dow Corning
	8	Ethylhexyl Ethylhexanoate	1.0	Symrise
	9	α- Bisabolol,	0.2	SC
	10	BHT	0.05	
	11	Propylparaben	0.1	
B	1	Glycerin	4.0	
	2	Xanthan Gum	0.05	SC
	3	Poria Cocos Root Extract（1%）	8.0	SC
	4	Allantion	0.2	
	5	Methylparaben	0.2	
	6	HR-S_1 (potassium cetyl phosphate)	0.7	
	7	NMF-50(Trimethylglycine)	0.5	SC
	8	Deionized Water	To 100	
C	1	Hyaluronic Acid（1%）	1.0	
D	1	IS-45	qs.	ISP
	2	Fragrance	qs.	

1. Heat and stir ingredients in Phase A (oil phase) to dissolve, control temperature at 80±2℃.

2. pre-mix and disperse well 1 and 2 in B phase (water phase), add to water, stir and heat to completely dissolve, stop heat at around 95℃, control temperature at around 85℃ prior to emulsification.
3. Suck Oil phase into emulsification vessel, and under constant stirring suck water phase into the vessel, emulsify for 15 minutes.
4. Cool to 60℃, increase the speed of scraper blade stirrer, add 1 in Phase C to the vessel; cool to 48℃ and then add 1 and 2 in Phase D, stir well.
5. Stop stir when temperature decrease to 43℃, and discharge the mixture.

3. Poria Balance Gentle Repairing facial cleanser

Phase	No.	Product Name / INCI Name	Wt. %	Supplier
A	1	Cetearyl Alcohol	4.5	Cognis
	2	Glyceryl Stearate	1.5	Cognis
	3	Mineral Oil	4.0	
	4	Isopropyl Myristate	2.0	Cognis
	5	Perogol O-25	0.3	
	6	α- Bisabolol,	0.2	SC
	7	BHT	0.02	
	8	Propylparaben	0.06	
B	1	EDTA-2Na	0.04	
	2	Glycerin	4.0	
	3	Poria Cocos Root Extract（1%）	8.0	SC
	4	Methylparaben	0.12	
	5	HR-S_1 (potassium cetyl phosphate)	2.5	
	6	Deionized Water	To 100	
C	1	IS-45	qs.	ISP
	2	Fragrance	qs.	

1. Heat and stir ingredients in Phase A (oil phase) to dissolve, control temperature at 80±2℃.
2. Add ingredients in B phase (water phase) add to water, stir and heat to completely dissolve, stop heat at around 95℃, control temperature at around 85℃ prior to

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emulsification.

3. **Suck Oil phase into emulsification vessel, and under constant stirring suck water phase into the vessel, emulsify for 15 minutes.**
4. **cool to 48℃ and then add 1 and 2 in Phase C, stir well.**
5. **Stop stir when temperature decrease to 42℃, and discharge the mixture.**