

# SpecWhite® PAD

(Potassium Azeloyl Diglycinate Solution)

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- ❑ A new-age, water-soluble derivative of Azelaic acid
- ❑ Comes in water base, friendly for acne skin
- ❑ Inherits all properties of Azelaic acid and is gentle for daily use
- ❑ Promising multi-function active, suitable for pigmentation-prone, acne-prone or rosacea-prone skin.

Spec-Chem Group · Application Center

Project Research DTW

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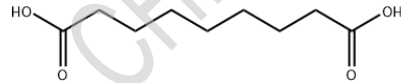
## Why we need Potassium Azeloyl Diglycinate (PAD)

### Benefit Review of Azelaic Acid

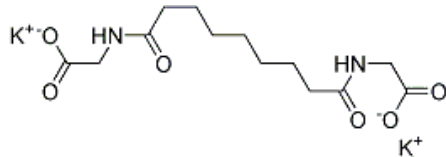
- a skin-lightening agent , a competitive inhibition of tyrosinase, the main enzyme involved in the formation of melanin. Thus, Azelaic acid has been topically used in the dermatological treatment of hypermelanic spots.
- a sebum-normalizing agent, cause a reduction of free fatty acids in cutaneous sebum due to a competitive inhibition of the enzyme 5- $\alpha$  reductase, thus inhibiting the conversion of testosterone to 5-dehydrotestosterone.
- A bacteriostatic agent against aerobic microorganisms such as Staphylococcus epidermidis, Staphylococcus aureus, Proteus mirabilis, Escherichia coli, Pseudomonas aeruginosa and Candida albicans, and against anaerobic ones such as Propionibacterium acnes.
- The latter two properties make azelaic acid especially effective in the treatment of acne, which involves sebum production and excretion, microbial colonization of the pilosebaceous unit and inflammatory reaction of the perifollicular area.

## Why we need Potassium Azeloyl Diglycinate (PAD)

Structurally speaking, Potassium Azeloyl Diglycinate (PAD) combines Azelaic Acid and hydrating amino acid Glycine.



**Azelaic Acid**  
SpecKare® ALA



**Potassium Azeloyl Diglycinate**  
SpecWhite® PAD

it must be present in high concentrations to be effective

1. it is not soluble at high concentrations, and gives poor cosmetic properties to formulations  
2. High melting point :98-106°C

azelaic acid

vs.

potassium azeloyl diglycinate

Exhibits very high water solubility, amphiphilicity, highly specific activities at low concentration and low toxicity, and excellent chemical stability and compatibilities.

insoluble in water base, making it difficult to work

comes in oil base, unfriendly for acne skin

found at a higher pH level and not very skin friendly

anti-inflammatory, anti-bacterial, anti-keratinizing & works on hyperpigmentation

a new-age, water-soluble derivative of azelaic acid

comes in water base, friendly for acne skin

found at a comparatively lower pH and skin friendly

inherits all properties of azelaic acid and is gentle for daily use

Azelaic acid is an awesome ingredient with anti-inflammatory, skin lightening and anti-acne effects, but its insolubility (it's soluble neither in water nor in oil) makes it difficult to use it in a cosmetically elegant and versatile way.

# Why we need Potassium Azeloyl Diglycinate (PAD)

Potassium Azeloyl Diglycinate (PAD) show no obvious risk of Cancer, Developmental & Reproductive Toxicity, Allergies & Immunotoxicity

POTASSIUM AZELOYL DIGLYCINATE



Score:



Data: None

Other Concerns	Functions
About the Chemical	Synonyms

Cancer ⓘ



Developmental & Reproductive Toxicity ⓘ

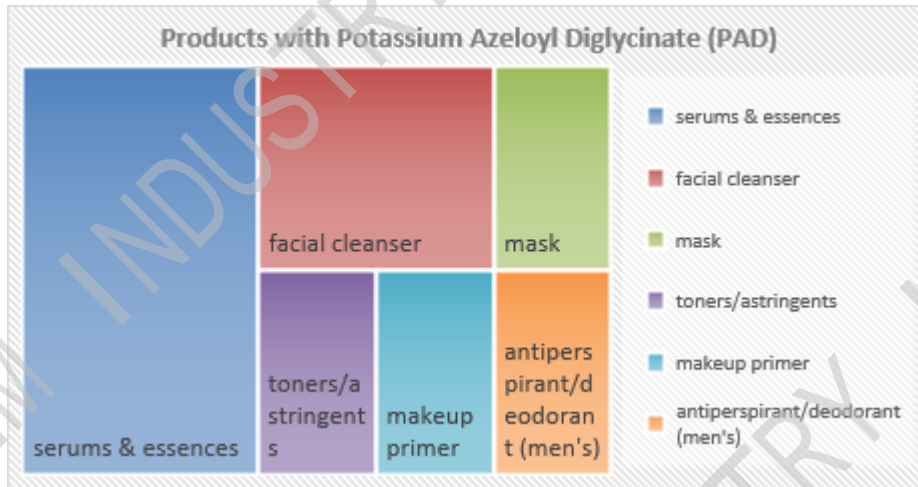


Allergies & Immunotoxicity ⓘ



Data Source: EWG

## Products with Potassium Azeloyl Diglycinate (PAD)



## The Product information of SpecWhite® PAD

Product No.:	110048
Trade Name:	SpecWhite® PAD
INCI Name:	Potassium Azeloyl Diglycinate, Water, Phenoxyethanol, Pentylene Glycol, Ethylhexylglycerin
CAS NO.:	477773-67-4, 7732-18-5, 122-99-6, 5343-92-0, 70445-33-9
EC NO.:	470-270-6, 231-791-2, 204-589-7, 226-285-3, 408-080-2
Application:	White/lightening, anti-acne, anti-wrinkle, moisturizing and etc.
Dosage:	2-15% (Rinse-off) 2-10% (Leave-on)
Storage	Store at room temperature. Keep container tightly closed in a dry and well-ventilated place.
Shelf life:	2 years
Package:	230Kg/Barrel

Items	Specification
Appearance	Colorless to light yellow transparent liquid
pH (5%)	6.5 - 8.0
Specific Gravity (20°C)	1.110 - 1.170
Solid content	28.0 - 34.0%
Lead	≤ 10 mg/kg
Arsenic	≤ 2 mg/kg
Mercury	≤ 1 mg/kg
Cadmium	≤ 5 mg/kg
Total plate count	≤ 500 cfu/g
Yeast & mould	≤ 100 cfu/g

## The Product information of SpecWhite® PAD

### Regulation status in chemicals:

Region / Country	Listing	Compositions					Compliance summary
		Potassium Azeloyl Diglycinate	Water	Phenoxyethanol	Pentylene Glycol	Ethylhexylglycerin	
China	IECSC - Inventory of Existing Chemical Substances in China	Not listed	Listed	Listed	Listed	Listed	Potassium Azeloyl Diglycinate: <b>Non-compliant</b> ; Others compliant
European Union	EINECS - European Inventory of Existing Commercial Chemical Substances,	Not listed	Listed	Listed	Listed	Listed	Ethylhexylglycerin registered at 10-100 t/a; Others each can be exempted if < 1tpa
UK	ELINCS - European List of Notified Chemical Substances, and NLP-No-longer Polymers List	Not listed	Listed	Listed	Listed	Listed	Each can be exempted if < 1tpa
Canada	DSL - Canada Domestic Substances List	Not listed	Listed	Listed	Not listed	Listed	Potassium Azeloyl Diglycinate: Exempted if < 100 kg/y
	NDSL - Canada Non-Domestic Substances List	Not listed	Not listed	Not listed	Listed	Not listed	Others compliant
	R-ICL - Revised In Commerce List	Not listed	Not listed	Not listed	Listed	Not listed	
Philippine	PICCS - Philippine Inventory of Chemicals and Chemical Substances	Not listed	Listed	Listed	Listed	Listed	Potassium Azeloyl Diglycinate: <b>Non-compliant</b> ; Others compliant
New Zealand	NZIoC - New Zealand Inventory of Chemicals	Not listed	Listed	Listed	Listed	Listed	Potassium Azeloyl Diglycinate: Exempted if non-hazardous Others compliant
Australia	AIIC - Australian Inventory of Industrial chemicals	Not listed	Listed	Listed	Listed	Listed	Potassium Azeloyl Diglycinate: <b>Non-compliant</b> ; Others compliant
South Korea	KECL - Korean Existing Chemicals List	Not listed	Listed	Listed	Listed	Listed	Exempted as raw materials for cosmetics, all compliant
China Taiwan	TCSI - Taiwan Chemical Substance Inventory	Listed	Listed	Listed	Listed	Listed	Each can be exempted if < 0.1 tpa
Switzerland	EINECS - European Inventory of Existing Commercial Chemical Substances	Not listed	Listed	Listed	Listed	Not listed	Not listed compositions: Exempted if < 1 t/y Others compliant
USA	TSCA Inv - Toxic Substances Control Act Chemical Substance Inventory	Not listed	Listed	Listed	Listed	Not listed	Not listed compositions: Exempted if only used in the production of cosmetics, food, food additives, drugs; All compliant
JAPAN	ENCS- Inventory of Existing and new chemical substances	Not listed	Not listed	Listed	Listed	Listed	Potassium Azeloyl Diglycinate: <b>Non-compliant</b> ; Water: exempted as naturally-occurring material; Others compliant
	ISHL- Japan ISHL Existing Substances List	Not listed	Listed	Listed	Not listed	Not listed	Not listed compositions: <b>non-compliant</b> ; Others compliant
Thailand	TECI - Thailand Existing Chemical Substance Inventory	Not listed	Listed	Listed	Listed	Listed	Potassium Azeloyl Diglycinate: <b>non-compliant</b> ; Others compliant
	Thailand Hazardous Substances List	Not listed	Not listed	Not listed	Not listed	Not listed	Potassium Azeloyl Diglycinate: Exempted if non-hazardous or < 1tpa; Others compliant
Vietnam	NCI - Vietnam National Chemical Inventory	Listed	Listed	Listed	Listed	Listed	All compliant
Malaysia	EHS Reference List	Not listed	Not listed	Listed	Not listed	Listed	Each can be exempted if non-hazardous or < 1tpa
Turkey	None	N/A	N/A	N/A	N/A	N/A	Each can be exempted if < 1tpa
Russia	Inventory of chemicals in the Russian Federation	Listed	Listed	Listed	Listed	Listed	All
Singapore	List of controlled hazardous substances	Not listed	Not listed	Not listed	Not listed	Not listed	All compliant
Brazil	No inventory established yet	N/A	N/A	N/A	N/A	N/A	Each can be exempted if the mean amount of the past 3 years < 1t/y

# The Product information of SpecWhite® PAD

## Regulation status in cosmetics:

Region/ Country	Listing	Compositions					Approved ingredient or not
		Potassium Diglycinate	Azeloyl Water	Phenoxyethanol	Pentylene Glycol	Ethylhexylglycerin	
Canada	List of Ingredients that are Prohibited for Use in Cosmetic Products	Not listed	Not listed	Not listed	Not listed	Not listed	Approved
	List of Ingredients that are Restricted for Use in Cosmetic Products	Not listed	Not listed	Not listed	Not listed	Not listed	
USA	Prohibited & Restricted Ingredients in Cosmetics	Not listed	Not listed	Not listed	Not listed	Not listed	Approved
	CTFA - International Cosmetic Ingredient Dictionary and Handbook	Listed	Listed	Listed	Listed	Listed	
European Union	Inventory of Ingredients	Listed	Listed	Listed	Listed	Listed	Approved with restrictions
	Annex II List of substances prohibited in cosmetic products	Not listed	Not listed	Not listed	Not listed	Not listed	
	Annex III List of substances which cosmetic products must not contain except subject to the restrictions laid down	Not listed	Not listed	Not listed	Not listed	Not listed	
	ANNEX V List of preservatives allowed in cosmetic products	Not listed	Not listed	Listed, limit: 1.0% or Preservatives allowed, limit: 1.0%	Not listed	Not listed	
UK	Refer to EU ingredient data	Not prohibited or restricted	Not prohibited or restricted		Not prohibited or restricted	Not prohibited or restricted	Approved with restrictions
Switzerland							
ISRAEL							
China	Inventory of Existing Cosmetic Ingredients in China (China IECIC)	Listed	Listed	Listed	Listed	Listed	Approved with restrictions
	List of prohibited ingredients or plant (animal) ingredients for cosmetics	Not listed	Not listed	Not listed	Not listed	Not listed	
	List of restricted ingredients in cosmetics	Not listed	Not listed	Not listed	Not listed	Not listed	
	List of preservatives allowed in cosmetic products	Not listed	Not listed	Listed, usage limit: 1.0%	Not listed	Not listed	
Japan	List of prohibited and restricted ingredients in cosmetics	Not listed	Not listed	Restricted, Maximum amount: 1.0 g per 100 g	Not listed	Not listed	Approved with restrictions
New Zealand	Cosmetic Products Group Standard: Schedule 4 Components Cosmetic Products Must Not Contain & Schedule 5 Components Cosmetic Products Must Not Contain Except Subject To The Restrictions And Conditions Laid Down	Not listed	Not listed	Not listed	Not listed	Not listed	Approved with restrictions
	Schedule 7 - Preservatives Cosmetic Products May Contain with Restrictions	Not listed	Not listed	Listed, usage limit: 1.0%	Not listed	Not listed	
Australia	Banned or restricted chemicals in consumer products and cosmetics	Not listed	Not listed	Listed in Poisons Standard Schedule 6	Not listed	Not listed	Approved with restrictions
South Korea	Prohibited or restricted ingredients for cosmetics	Not listed	Not listed	Restricted, Usage Limit: 1%	Not listed	Not listed	Approved with restrictions
China Taiwan	List of Prohibited or Restricted Ingredients	Not listed	Not listed	Not listed	Not listed	Not listed	Approved with restrictions
	List of Preservatives in Cosmetic Products	Not listed	Not listed	Listed, Usage Limit: 1%	Not listed	Not listed	
ASEAN (Indonesia, Philippines, Brunei, Laos, Myanmar, Vietnam)	List of substances which must not form part of the composition of cosmetic products	Not listed	Not listed	Not listed	Not listed	Not listed	Approved with restrictions
	List of substances which cosmetic products must not contain except subject to restrictions and conditions laid down	Not listed	Not listed	Not listed	Not listed	Not listed	
	List of preservatives allowed	Not listed	Not listed	Listed, usage limit: 1.0%	Not listed	Not listed	
Russia	List of substances prohibited for use in perfumery and cosmetic products	Not listed	Not listed	Not listed	Not listed	Not listed	Approved with restrictions
	List of substances permitted for use subject to the specified restrictions in perfumery and cosmetic products	Not listed	Not listed	Not listed	Not listed	Not listed	
	List of permitted preservatives in perfumery and cosmetic products	Not listed	Not listed	Listed, Usage Limit: 1%	Not listed	Not listed	
MERCOSUR (Argentina, Paraguay, Uruguay, Venezuela)	List of substances that personal hygiene products, cosmetics, and perfumes should not contain, except under the conditions and with the established restrictions	Not listed	Not listed	Not listed	Not listed	Not listed	Approved with restrictions
	List of substances allowed as preservatives for personal hygiene, cosmetic and perfume products	Not listed	Not listed	Listed, usage limit: 1.0%	Not listed	Not listed	
HK	No positive / negative list existed in HK	N/A	N/A	N/A	N/A	N/A	Approved

## The Product information of SpecWhite® PAD

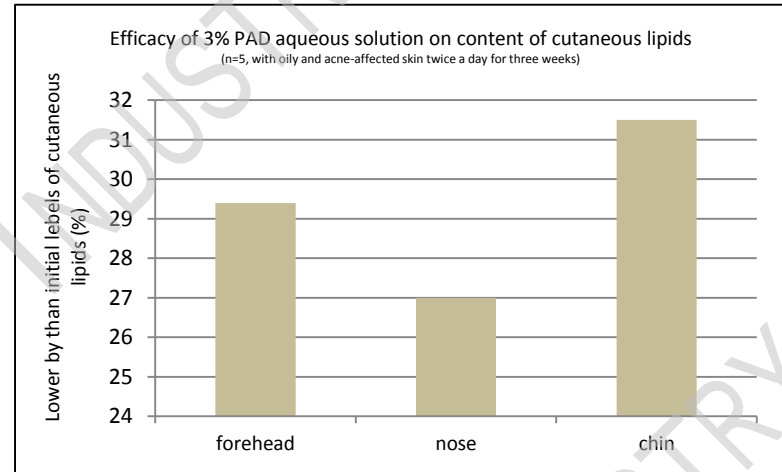
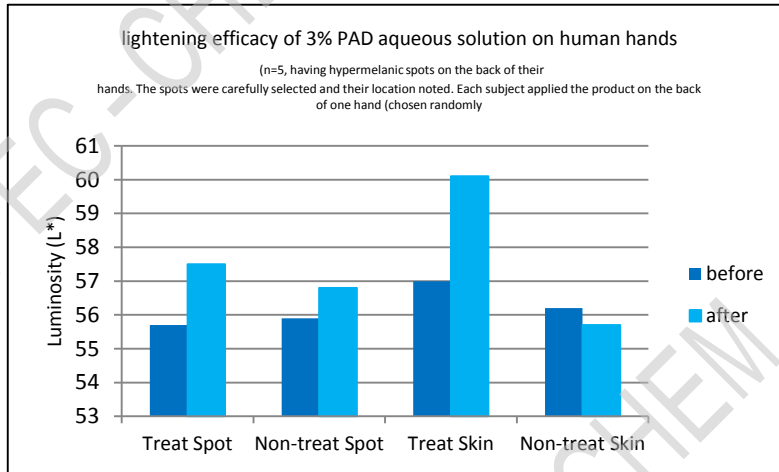


### Features of SpecWhite® PAD

- Value-added performance by adding amino acid Glycine
- Exhibits very high water solubility, amphiphilicity and hydration
- Highly specific activities at low concentration
- Excellent chemical stability and compatibilities
- More formulation-applicable flexibility, easy to use and handle
- Suitable in both aqueous and emulsifying formulation, stable without precipitation

## Efficacy Claims of Potassium Azeloyl Diglycinate (PAD)

### Skin-lightening and sebum-balancing Efficacy of 3% PAD aqueous solution



- The results of measuring the “L\*” parameter reveal a significant increase in skin brightness on both areas treated with 3% PAD.
- DPA is effective in the treatment of oily and acne-affected skin, effectively reducing the excess of cutaneous lipids.

## Efficacy Claims of Potassium Azeloyl Diglycinate (PAD)

### Clinical Test -Effects of Tranexamic Acid (TA) & PAD & Niacinamide (VB3) on Melasma (Thai Adults)

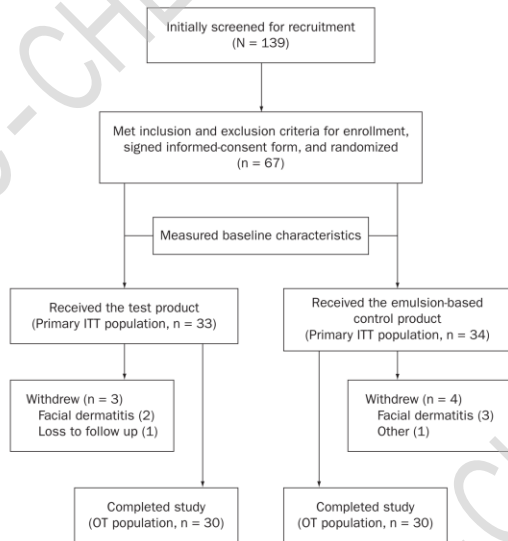
Test Subjects:	Thai male and female patients with mild-to-moderate epidermal melisma
Test Location:	melasma location in face (forehead 30%, right 30% and left 30% malar, and chin 10%)
Test Conditions:	temperature of $27 \pm 2^{\circ}\text{C}$ , relative humidity of $55\% \pm 5\%$ .
Test Duration:	Every two weeks, for 8 consecutive weeks
Usage:	The assigned product was applied to melasma areas twice a day (at morning and at bedtime) after washing of the facial skin.
Test Sample:	6.5w/w% Emulsion Containing Combination of TA & PAD & VB3 VS Control Emulsion Base The emulsion-base consisted of polypropylene glycol-15 stearyl ether, isohexadecane, steareth-2, steareth-21, stearic acid, cetearyl alcohol, polyacrylamide, C13-14 isoparaffin, laureth-7, dimethicone, glycerine, phenoxyethanol, methylparaben, propylparaben, ethylparaben, butylparaben, isobutylparaben, sodium hyaluronate, and perfume.
Supplemental Sample:	supplemental sunscreen product with sun protection factor (SPF) 30 : 4.00% w/w titanium dioxide and 2.32% w/w ethylhexyl methoxycinnamate.
Test Parameters:	Relative melanin value (RMV), Melasma Area and Severity Index (MASI) Skin hydration/moisture content, skin pH, redness (erythema value) Color photographs of patients
Test Instruments:	Mexameter MX 18, Courage and Khazaka Electronic GmbH, Köln, Germany Corneometer CM 825, Courage and Khazaka Electronic GmbH EOS 400D with an EFS 18-55 mm lens, Canon Inc., Tokyo, Japan

Recommended use level: TA (1-2%) & PAD (4-6%) & VB3 (0.5-2%)



# Efficacy Claims of Potassium Azeloyl Diglycinate (PAD)

## Clinical Test -Effects of Tranexamic Acid (TA) & PAD & Niacinamide (VB3) on Melasma (Thai Adults)



Subject disposition throughout the course of the study.  
ITT = intent-to-treat; OT = on-treatment.

**Table I. Demographic and baseline characteristics of patients enrolled in the study (N = 67).**

Characteristic	Test Group (n = 33)	Control Group (n = 34)	P*
Age, mean (SD), y	43.1 (6.3)	41.3 (6.4)	0.260
Sex, no. (%)			
Male	1 (3)	1 (3)	
Female	32 (97)	33 (97)	
Race, no. (%)			
Asian (Fitzpatrick skin type IV)	33 (100)	34 (100)	
Education, no. (%)			
Less than primary school	4 (12)	1 (3)	
Primary school	19 (58)	14 (41)	
High school	4 (12)	14 (41)	
Bachelor's degree or equivalent	6 (18)	5 (15)	
Occupation, no. (%)			
Government officer	2 (6)	1 (3)	
Contingent worker	9 (27)	19 (56)	
Agriculturalist	9 (27)	5 (15)	
Freelance/personal business	5 (15)	6 (18)	
Unemployed	8 (24)	3 (9)	
Skin properties, mean (SD)			
Moisture content, AU <sup>†</sup>	59.6 (7.8)	58.8 (8.2)	0.695
Skin pH	5.1 (0.5)	5.2 (0.5)	0.236
Erythema value, AU	339.0 (59.8)	337.1 (58.1)	0.899
RMV, AU	79.1 (19.9)	75.3 (14.4)	0.370
MASI score	17.3 (5.4)	15.9 (6.6)	0.351

AU = arbitrary unit; RMV = relative melanin value; MASI = Melasma Area and Severity Index.

\*2-Group t test with a 2-sided significance level of 0.05.

<sup>†</sup> One unit represents a water content of stratum corneum of 0.02 mg/cm<sup>2</sup>.

## Efficacy Claims of Potassium Azeloyl Diglycinate (PAD)

### Clinical Test -Effects of Tranexamic Acid (TA) & PAD & Niacinamide (VB3) on Melasma (Thai Adults)

**Table II. Measured parameters in the test and control groups. Values are mean (SD).**

Parameter	Primary ITT Population			OT Population		
	Test Group (n = 33)	Control Group (n = 34)	P	Test Group (n = 30)	Control Group (n = 30)	P*
RMV, AU						
Week 0	79.1 (19.9)	75.3 (14.4)	0.370	80.6 (19.7)	74.4 (17.3)	0.220
Week 2	72.1 (16.2)	72.8 (15.9)	0.857	73.2 (16.2)	73.9 (17.3)	0.858
Week 4	67.9 (15.7)	73.6 (14.4)	0.123	68.5 (15.9)	74.7 (15.6)	0.130
Week 6	63.0 (16.4)	74.0 (14.2)	0.005	63.1 (16.8)	75.0 (15.5)	0.006
Week 8	59.6 (17.0)	74.7 (14.9)	<0.001	59.4 (17.4)	75.4 (16.3)	0.001
MASI score						
Week 0	17.3 (5.4)	15.9 (6.6)	0.351	17.7 (6.2)	16.0 (6.0)	0.275
Week 2	16.0 (4.7)	14.6 (6.3)	0.314	14.0 (3.6)	16.1 (4.9)	0.062
Week 4	14.7 (5.3)	14.8 (6.8)	0.962	12.7 (3.6)	16.1 (5.2)	0.005
Week 6	13.6 (4.7)	14.7 (5.8)	0.388	12.4 (3.2)	16.1 (4.1)	<0.001
Week 8	12.4 (3.7)	15.2 (6.3)	0.027	11.5 (2.7)	17.2 (4.3)	<0.001
Moisture content, AU <sup>†</sup>						
Week 0	59.6 (7.8)	58.8 (8.2)	0.695	43.1 (6.3)	41.3 (6.4)	0.403
Week 2	64.9 (8.5)	63.7 (7.2)	0.513	64.9 (8.3)	64.6 (9.6)	0.910
Week 4	66.8 (8.8)	67.7 (6.6)	0.667	67.0 (8.6)	68.0 (5.8)	0.560
Week 6	66.7 (8.4)	65.4 (8.4)	0.543	66.8 (8.1)	65.5 (8.1)	0.537
Week 8	66.9 (7.4)	67.6 (7.6)	0.699	67.1 (7.1)	68.0 (7.1)	0.611

**Table II (continued).**

Parameter	Primary ITT Population			OT Population		
	Test Group (n = 33)	Control Group (n = 34)	P	Test Group (n = 30)	Control Group (n = 30)	P*
Skin pH						
Week 0	5.1 (0.5)	5.2 (0.5)	0.236	5.1 (0.5)	5.3 (0.5)	0.115
Week 2	5.2 (0.6)	5.3 (0.5)	0.307	5.2 (0.6)	5.3 (0.5)	0.316
Week 4	5.4 (0.5)	5.5 (0.4)	0.452	5.4 (0.5)	5.5 (0.4)	0.431
Week 6	5.1 (0.5)	5.4 (0.5)	0.018	5.0 (0.5)	5.4 (0.6)	0.019
Week 8	5.1 (0.5)	5.1 (0.5)	0.893	5.0 (0.5)	5.0 (0.6)	0.824
Erythema value, AU						
Week 0	339.0 (59.8)	337.1 (58.1)	0.899	333.1 (53.7)	335.4 (53.3)	0.868
Week 2	339.3 (60.9)	337.2 (60.9)	0.888	334.0 (56.3)	334.6 (55.1)	0.966
Week 4	347.1 (62.8)	341.4 (60.3)	0.706	342.5 (59.2)	339.3 (54.6)	0.828
Week 6	345.8 (63.6)	342.6 (59.2)	0.836	341.0 (60.2)	340.7 (53.2)	0.982
Week 8	347.1 (58.8)	342.0 (64.2)	0.733	342.5 (54.6)	340.0 (59.4)	0.862

ITT = intent-to-treat; OT = on-treatment; RMV = relative melanin value; AU = arbitrary unit; MASI = Melasma Area and Severity Index.

\*2-Group t test with a 2-sided significance level of 0.05.

<sup>†</sup> One unit represents the water content of stratum corneum of 0.02 mg/cm<sup>2</sup>.

These findings indicate that the test product containing the combination was associated with objective reduction of melasma intensity in Thai adults. In the present study, the clinical improvement of melasma in the test group might result from interference in different steps of the melanogenesis pathway by the active agents contained in the combination.

## Efficacy Claims of Potassium Azeloyl Diglycinate (PAD)

### Clinical Test -Effects of Tranexamic Acid (TA) & PAD & Niacinamide (VB3) on Melasma (Thai Adults)

**Table III. Adverse events (AEs) observed or reported in the test and control groups during the study. All data are number (%).**

AE	Test Group (n = 33)	Control Group (n = 34)	P*
Graded by dermatologist			
Erythema			
Slight redness	1 (3)	2 (6)	0.558
Moderate redness	0	1 (3)	0.315
Intense redness	1 (3)	1 (3)	0.987
Scaling			
Dry without scaling	1 (3)	0	0.318
Moderate scaling	1 (3)	0	0.313
Edema	0	1 (3)	0.331
Reported by patients			
Burning and/or stinging	4 (12)	5 (15)	

\*2-Group t test with a 2-sided significance level of 0.05.

*One more expectation from use of the combination is to reduce the risk of adverse effects. The test product was tolerated well during the study period of 8 weeks.*

*The incidence of patients with AEs was not significantly different between the test and control groups.*

## Efficacy Claims of Potassium Azeloyl Diglycinate (PAD)

### Clinical Test -Effects of 5% PAD & 1% hydroxypropyl chitosan (HPCH) on Rosacea (Chronic inflammatory skin disease)

**Test subjects:** 42 patients (rosacea stage I & II, european origin), 18-60 years old,  
28 in test group, 14 in placebo group

**Clinical symptom:** Flushing, persistent erythema, inflammatory papules, pustules, nodules,  
edema, and telangiectasia.

**Test location:** Face

**Test method:** Apply the cream twice daily for 4 weeks

**Test sample:** Cream containing 5% potassium azeloyl diglycinate (PAD) & 1%  
hydroxypropyl chitosan (HPCH)

**Test parameters:** Erythema, skin hydration

**Test instruments:** Mexameter® and Corneometer®

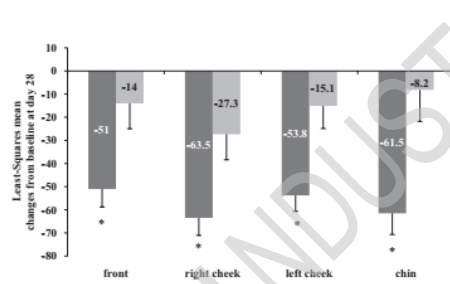


## Efficacy Claims of Potassium Azeloyl Diglycinate (PAD)

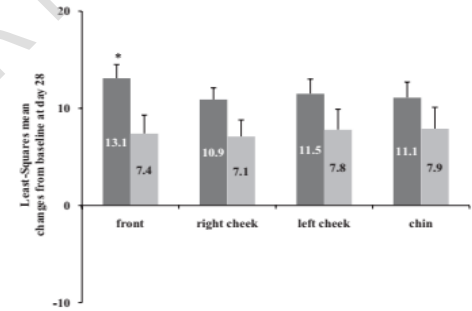
### Clinical Test -Effects of 5% PAD & 1% hydroxypropyl chitosan (HPCH) on Rosacea (Chronic inflammatory skin disease)

**Tabel IV** demographic characteristics

	5% PAD+1% HPCH	Placebo
Gender, N (%)		
Males	8 (28.6)	3 (21.4)
Females	20 (71.4)	11 (78.6)
Age, years		
Mean ± SD	40.3 ± 11.3	39.3 ± 11.3
Median	40	34
Range	20–60	26–60



■ 5% PAD+1% HPCH VS ■ Placebo, \*p values<0.05 (ANCOVA model)  
**Fig 1** Evaluation of erythema by means of Mexameter pre-posttreatment. Least-squares mean changes from baseline.



■ 5% PAD+1% HPCH VS ■ Placebo, \*p values<0.05 (ANCOVA model)  
**Fig 2** Evaluation of hydration by means of Corneometer pre-posttreatment. Least-squares mean changes from baseline.

- The mean erythema index in the ANCOVA model showed a statistically significant reduction at the end of treatment in favor of 5% PAD+1% HPCH in all evaluated facial areas.
- As expected, the mean stratum corneum hydration was consistently increased, on all facial sites both in the placebo and in 5% PAD+1% HPCH groups. Besides, the growth of stratum corneum hydration 5%PAD+1% HPCH groups is higher than that in placebo.

## Efficacy Claims of Potassium Azeloyl Diglycinate (PAD)

### Clinical Test -Effects of 5% PAD & 1% hydroxypropyl chitosan (HPCH) on Rosacea (Chronic inflammatory skin disease)



Fig 3 Front erythema improvement after 28 days of treatment with 5% PAD+1% HPCH



Fig 4 Right cheek erythema improvement after 28 days of treatment with 5% PAD+1% HPCH

In conclusion, the anti-inflammatory and moisturizing effects of potassium azeloyl diglycinate (PAD) combined with the protective properties of HPCH allow this new product to be an advance in improving symptoms of rosacea.

## The Application Guide of SpecWhite® PAD



### **SpecWhite® PAD**

**Solubility:** water-soluble

#### **Compatibility with:**

Anionic surfactants, Non-ionic surfactants, Rheological modifiers (Guar Gum, hydroxyethylcellulose), Anionic emulsifiers ( Potassium palmitoyl hydrolyzed wheat protein+glyceryl stearate+cetearyl alcohol), Non-ionic emulsifiers (Cetearyl alcohol + Cetearyl glucoside)

#### **Incompatibility with:**

Rheological modifiers (sensitive to electrolytes), Substances of cationic nature

#### **Usage:**

China—2.0-15% (active  $\leq$ 5%, in Rinse-off); 2.0-10% (active  $\leq$ 3.5% in Leave-on)

EU, USA—No limitations

## The Application Guide of SpecWhite® PAD

### Formulation examples of PAD

#### Formula 1. Protective and Lightening Day Cream

Arachidyl alcohol (and) behenyl alcohol (and) arachidyl glucoside	5.0%wt
<i>Triticum vulgare</i> (wheat germ) oil	5.0
<i>Olea europaea</i> (olive) oil unsaponifiables	5.0
<i>Persea gratissima</i> (avocado) oil	3.0
Oryzanol (Gamma Oryzanol)	0.5
Dimethicone	0.48
Tocopheryl acetate	0.5
Zinc oxide	1.0
Tocopherol (and) lecithin (and) ascorbyl palmitate (and) citric acid	0.02
Phenoxyethanol (and) methylparaben (and) ethylparaben (and) propylparaben (and) butylparaben	0.5
Fragrance ( <i>parfum</i> )	0.2
Water ( <i>aqua</i> )	qs
Glycerin	2.0
Potassium azeloyl diglycinate	5.0

#### Properties

Appearance: homogeneous viscous emulsion  
 Color: ivory  
 pH: 6.35  
 Viscosity: 10000 mPa.s (Viscotester Haak, spindle 1.25 rpm)  
 Stability: centrifuge (30' at 4000 rpm)

#### Formula 2. Low Viscosity Lightening Cream

Glyceryl stearate (and) cetearth-20 (and) cetearth-12 (and) cetearyl alcohol (and) cetyl palmitate	4.5%wt
Ceteareth-20	1.2
Squalane	5.0
Coco caprylate/caprate	5.0
Phenoxyethanol (and) methylparaben (and) ethylparaben (and) propylparaben (and) butylparaben	0.5
Water ( <i>aqua</i> )	qs
Potassium azeloyl diglycinate	5.0
Fragrance ( <i>parfum</i> )	0.5

#### Properties

Appearance: low viscosity emulsion  
 Color: white, (Tyndall effect)  
 pH: 6.55  
 Viscosity: < 100 mPa.s (Viscotester Haak, spindle 3.25 rpm)  
 Stability: centrifuge (30' at 4000 rpm) - stable



## The Application Guide of SpecWhite® PAD

### Commercial Products containing Potassium Azeloyl Diglycinate (PAD)



#### Sesderma

#### Sensyses Cleanser - Lightening

Cleanser specially formulated for dull skins or lacking radiance and to tackle skin spots.

#### Ingredients overview

Aqua, Pentylene Glycol, Glycerin, Alpha-Glucan Oligosaccharide, Panthenol, **Potassium Azeloyl Diglycinate (anti-acne)**, Glycyrrhiza Glabra Root Extract, Ascorbyl Glucoside, 4-Butylresorcinol, Polyglyceryl-6 Caprylate/Caprate, Polyglyceryl-4 Laurate/Sebacate, Propylene Glycol, Lecithin, Alcohol, Disodium Cocoamphodiacetate, Disodium EDTA, Polysorbate 20, Sodium Cholate, Sodium Hydroxide, Sodium Chloride, Pantolactone, Potassium Sorbate, Sodium Benzoate, Phenoxyethanol, Parfum, Ci 17200

## The Application Guide of SpecWhite® PAD

### Commercial Products containing Potassium Azeloyl Diglycinate (PAD)



#### Sesderma

#### Sensyses Cleanser Ros

Cleanser for red and sensitive skin

#### Ingredients overview

Aqua, Pentylene Glycol, Glycerin, **Potassium Azeloyl Diglycinate (anti-acne)**, Panthenol, Ascorbyl Glucoside, Sodium Bicarbonate, Tranexamic Acid, Niacin, Melaleuca Alternifolia Leaf Oil, Phytosphingosine Hcl, Tetrasodium Tetracarboxymethyl Naringenin chalcone, Leptospermum Scoparium Branch/Leaf Oil, Hydrogenated Lecithin, Retinal, Polysorbate 20, Polyglyceryl-6 Caprylate/Caprinate, Polyglyceryl-4 Laurate/Sebacate, Lecithin, Alcohol, Disodium Cocoamphodiacetate, Disodium EDTA, Sodium Cholate, Sodium Chloride, Sodium Hydroxide, Pantolactone, Hydrochloric Acid, Phenoxyethanol, Parfum, Ci 42090

## The Application Guide of SpecWhite® PAD

### Commercial Products containing Potassium Azeloyl Diglycinate (PAD)



#### Sesderma

##### Sensyses Cleanser Sebum

Facial cleansing tailored to the needs of your skin. The new generation of liposomal water solutions to cleanse and remove make-up while repairing your skin and maintaining its balance.

#### Ingredients overview

Aqua, Pentylene Glycol, Glycerin, Alpha-Glucan Oligosaccharide, Panthenol, Ginkgo Biloba Leaf Extract, **Potassium Azeloyl Diglycinate**, Copper Sulfate, Cetylpyridinium Chloride, Thymus Vulgaris Flower/Leaf Extract, Phytosphingosine Hcl, Zinc Chloride, Polyglyceryl-4 Laurate/Sebacate, Polyglyceryl-6 Caprylate/Caprata, Propylene Glycol, Polysorbate 20, Lecithin, Alcohol, Disodium Cocoamphodiacetate, Disodium EDTA, Sodium Cholate, Sodium Hydroxide, Pantolactone, Phenoxyethanol, Potassium Sorbate, Parfum

## The Application Guide of SpecWhite® PAD

### Commercial Products containing Potassium Azeloyl Diglycinate (PAD)



#### Sesderma Azelac Moisturising Gel

*Hydrating gel, light and of excellent tolerance due to its pH 5.5. DPA combines the properties of azelaic acid and moisturizing action of glycine. It has a calming and anti-radical action, fights redness and impurities that accompanies couperosis. Sebumregulator action, decreasing the secretion of sebum and eliminating pimples.*

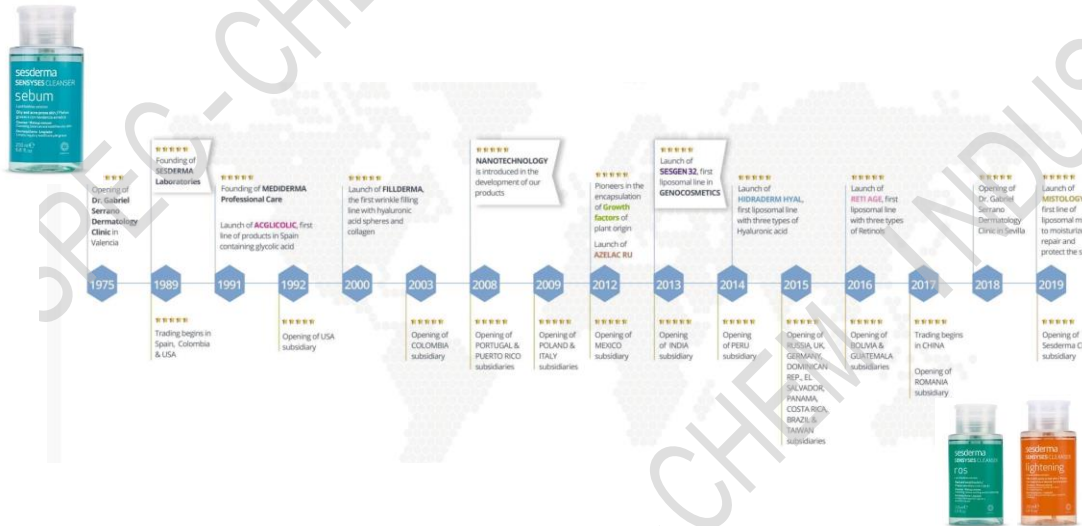
#### Ingredients overview

Aqua, Propanediol, Propylene Glycol, Polysorbate 20, Titanium Dioxide, Lecithin, Triethanolamine, Alcohol, Ammonium Acryloyldimethyltaurate/Vp Copolymer, **Potassium Azeloyl Diglycinate**, Triticum Vulgare Germ Extract, Silybum Marianum Extract, Azelaic Acid, Tranexamic Acid, Niacin, Cetylpyridinium Chloride, Panthenol, Melaleuca Alternifolia Leaf Oil, Cichorium Intybus Root Extract, Sodium Hyaluronate, Retinal, Phytosphingosine Hcl, Leptospermum Scoparium Branch/Leaf Oil, Hydrogenated Lecithin, Acrylates/C10-30 Alkyl Acrylate Crosspolymer, Mica, Ethylhexylglycerin, Acrylamide/Sodium Acryloyldimethyltaurate Copolymer, C13-14 Isoparaffin, Sodium Cholate, Potassium Sorbate, Sodium Hydroxide, Sodium Chloride, Laureth-7, Tin Oxide, Retinyl Palmitate, Ethylhexylglycerin, Tocopherol, Pantolactone, Hydrochloric Acid, Phenoxyethanol, Parfum, Linalool, Benzyl Salicylate, Citronellol, Benzyl Benzoate, Geraniol, Farnesol, Benzyl Alcohol

# The Application Guide of SpecWhite® PAD

## Commercial Products containing Potassium Azeloyl Diglycinate (PAD)

Sesderma is a Spanish dermatology laboratory founded in 1989 by Dr. Gabriel Serrano, a world-renowned dermatologist. More Than 30+ Years.



Anti-acne, Skin brightening, Soothing



## The Application Guide of SpecWhite® PAD

### Commercial Products containing Potassium Azeloyl Diglycinate (PAD)



#### Paula's Choice Defense Nightly Reconditioning Moisturizer

*Eight superfoods plus antioxidants strengthen your skin's environmental defenses while hydrating, softening and clarifying overnight.*

#### Ingredients overview

Water, Glycerin, Ethylhexyl Palmitate, Hydroxyethyl Acrylate/Sodium Acryloyldimethyl Taurate Copolymer, Isoamyl Laurate, Prunus Serotina Fruit Extract, Almond/Borage/Linseed/Olive Acids/Glycerides, Medicago Sativa Extract, Sesamum Indicum Seed Extract, Hydrolyzed Eruca Sativa Leaf, Sclerocarya Birrea Seed Oil, Hydrolyzed Algae Extract, Palmitoyl Hexapeptide-12, Palmitoyl Dipeptide-10, Sodium Hyaluronate, Ceramide Ng, Helianthus Annuus Seed Oil, Cocoyl Proline, Tocopherol, Allantoin, Trehalose, Eclipta Prostrata Extract, **Potassium Azeloyl Diglycinate**, Opuntia Ficus-Indica Stem Extract, Melia Azadirachta Leaf Extract, Leuconostoc/Radish Root Ferment Filtrate, Moringa Oleifera Seed Oil, Alaria Esculenta Extract, Adenosine Phosphate, Peg-10 Phytosterol, Tribehenin, Hydrolyzed Vegetable Protein, Sorbitan Oliviate, Sodium Gluconate, Zinc Gluconate, Copper Gluconate, Magnesium Aspartate, Cetearyl Oliviate, Isoamyl Cocoate, Caprylic/Capric Triglyceride, Polyglyceryl-10 Caprylate/Caprinate, Microcrystalline Cellulose, C12-15 Alkyl Benzoate, Xanthan Gum, Pentylene Glycol, Butylene Glycol, Sodium Citrate, Phenoxyethanol, Potassium Sorbate, Ethylhexylglycerin

## The Application Guide of SpecWhite® PAD

### Commercial Products containing Potassium Azeloyl Diglycinate (PAD)



#### LANCER

##### Clarifying Detox Mask with Green Tea + 3% Sulfur

*Your skin will be detoxified thanks to the 3% Sulphur concentrate that leaves pores unclogged, with Green Clay and Green Tea reducing redness for a more even all-over colour. Rough textures and blackheads will be smoothed and, with the help of Azelaic Acid, your complexion will glow naturally and have less excess oil.*

#### Ingredients overview

Active Ingredients: Sulfur (3%)

Inactive Ingredients: Water, Illite, Glycerin, Propanediol, Magnesium Aluminum Silicate, Kaolin, Ethyl Linoleate, Glyceryl Stearate, Cetearyl Alcohol, Ceteareth-20, PEG-100 Stearate, Microcrystalline Wax, **Potassium Azeloyl Diglycinate**, Morinda Citrifolia Extract, Citrullus Lanatus (Watermelon) Fruit Extract, Menthol, Camellia Sinensis Leaf Extract, Pyrus Malus (Apple) Fruit Extract, Lens Esculenta (Lentil) Fruit Extract, Sodium Lactate, Sodium PCA, Citrus Aurantium Bergamia (Bergamot) Peel Oil, Polyisobutene, Caprylyl/Capryl Glucoside, Sorbitan Oleate, Sodium Acrylate/Sodium Acryloyldimethyl Taurate Copolymer, Caprylyl Glycol, Ethylhexylglycerin, Potassium Chloride, Citric Acid, Disodium EDTA, Xanthan Gum, Chlorphenesin, Potassium Sorbate, Sodium Benzoate, Phenoxyethanol, Chromium Oxide Green

## The Application Guide of SpecWhite® PAD

### Commercial Products containing Potassium Azeloyl Diglycinate (PAD)



#### **Avoskin**

##### **Your Skin Bae Azeclair 10% + Kombucha 3% + Niacinamide 2,5% Vaccine Serum**

*An exfoliating serum while brightening the skin. Contains less azeclair than azelaic acid, this serum can brighten facial skin without making the skin dry and irritated. The content of niacinamide and kombucha in it will improve skin texture as well as brighten*

#### **Ingredients overview**

Aqua, **Potassium Azeloyl Diglycinate**, Glycerin, Saccharomyces/Xylinum/Black Tea Ferment, Biosaccharide Gum-1, Butylene Glycol, Niacinamide, Hydroxyethyl Cellulose, Phenoxyethanol, Glycerin, Allantoin, Chlorphenesin, Disodium EDTA, Caprylyl Glycol, Sodium Bisulfite

*Thank you for your attention!*



**Spec-Chem Group**

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