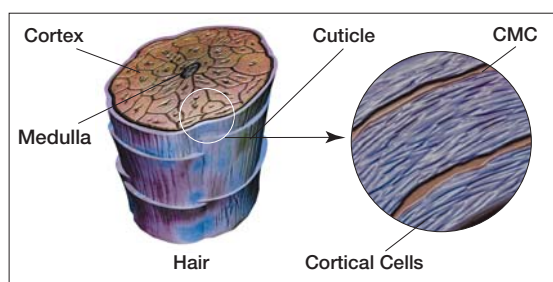


# Amino Acid Based Humectant

# PRODEW® 500

PRODEW® 500 is the amino acid blend, developed to realize a new technology for hair care. Unlike in the case of the skin, the presence and the role of naturally occurring free amino acids in hair are not well known, but amino acids applied externally are known to interact with the hair to produce various cosmetic effects, such as moisturizing, strengthening structure, color-protect and repair of surface damage.

## ● Human Hair Structure



Components	Concentration	Effects
Sodium PCA	20%	Moisturizing, Conditioning, Improvement of Color Retention
Arginine	7%	Moisturizing, Conditioning, Improvement of PCA adsorption
Amino Acids Mix	7%	Damage Care
Sodium Lactate	12%	Moisturizing
Aspartic Acid	4%	pH adjustment
Water	50%	

※The Composition of Amino Acids Mix  
The composition of "Amino Acids Mix" is modeled after the constituent amino acids of protein in Cell Membrane Complex (CMC)

## Major Applications

PRODEW® 500 provides a variety of functions in various cosmetic preparations.

- Hair Care Products : shampoos, conditioners, post-dye conditioners, hair masks, hair sprays, hair styling gels, etc.
- Skin Care Products : creams, lotions, tonics, facial cleanser, shower gels, etc.
- Sun Care Products : pre and post sun care creams, lotions, gels, etc.
- Make-Up Products : foundations, lipsticks, etc.

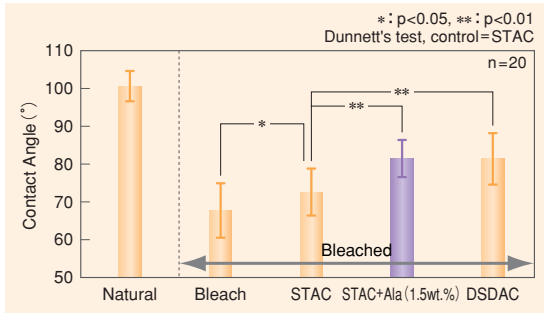
## Characteristics

### ● The efficacy of amino acids and PCA on hair

- Basic amino acids : improve hair strength and hair shine
- Neutral amino acids : improve the dry feel of hair (combability, smoothness and silky feel)
- Acidic amino acids : improve the wet feel of hair (combability and smoothness)
- PCA : improve color retention of dyed hair

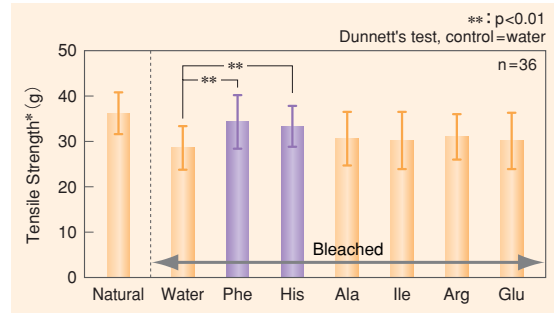
## ● Damage Care by Various Amino Acids

Alanine in a hair conditioner increases hair surface hydrophobicity.



Method : Japanese hair, bleached 4 times  
Cationic surfactant 0.6wt.%, Cetyl alcohol 3.0wt.%  
30sec. application. / 30sec. rinse  
STAC : Steartrimonim Chloride  
DSDAC : Distearylidimonium Chloride

Histidine and Phenylalanine improve the tensile strength of hair in water.



Method : Japanese hair, bleached 4 times  
Amino acid 2wt.% aq. 3min. immersion. / 1min. rinse 35°C  
Stress at 20% extension measured in water

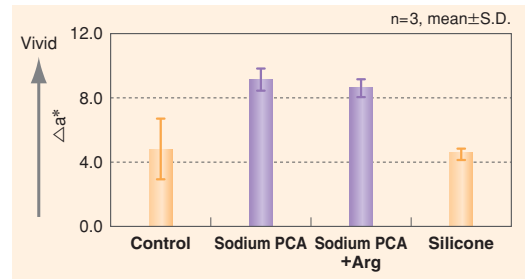
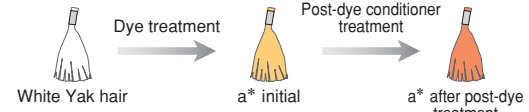
## ● Effects of Sodium PCA for Oxidative Color

Color development of red semi-permanent hair dye was improved by post-dye treatment with a hair conditioner containing Sodium PCA.

Test Formulation : Hair Conditioners	Sodium PCA			
	Control	Sodium PCA	+Arg	Silicone
Cetrimonium Chloride (active)	2.5	2.5	2.5	2.5
Ceteareth-20	0.5	0.5	0.5	0.5
Cetyl alcohol	4.0	4.0	4.0	4.0
Sodium PCA	-	2.0	1.0	-
Arginine	-	-	0.4	-
Amodimethicone. emulsion*	-	-	-	2.0
Methylpraben	0.2	0.2	0.2	0.2
Citric acid	pH3.0	pH3.0	pH3.0	pH3.0
Water	balance	balance	balance	balance
Total	100.0	100.0	100.0	100.0

\*Dow Corning 2-8177 Emulsion

$\Delta a^* = a^* \text{ after post-dye treatment} - a^* \text{ initial}$



## Material Information

Trade Name	Chemical Name	CAS No.	EINECS No.	Physical Form	Packing	CTFA INCI Name	Composition (%)
PRODEW® 500	Sodium L-Pyrrolidone Carboxylate	28874-51-3	249-277-1	50% Aqueous Solution	20kg Can	Sodium PCA	15.00
	Sodium Lactate	72-17-3	200-772-0			Sodium Lactate	12.00
	L-Arginine	74-79-3	200-811-1			Arginine	8.00
	L-Aspartic Acid	56-84-8	200-291-6			Aspartic Acid	5.20
	L-Pyrrolidonecarboxylic Acid	98-79-3	202-700-3			PCA	4.27
	Glycine	56-40-6	200-272-2			Glycine	1.28
	L-Alanine	56-41-7	200-273-8			Alanine	1.20
	L-Serine	56-45-1	200-274-3			Serine	0.80
	L-Valine	72-18-4	200-773-6			Valine	0.64
	L-Proline	147-85-3	205-702-2			Proline	0.40
	L-Threonine	72-19-5	200-774-1			Threonine	0.40
	L-Isoleucine	73-32-5	200-798-2			Isoleucine	0.40
	L-Histidine	71-00-1	200-745-3			Histidine	0.16
L-Phenylalanine	63-91-2	200-568-1	Phenylalanine	0.16			
Water	7732-18-5	231-791-2	Water	Balance			

Please contact AJINOMOTO group, when you have questions about the trademark registration.

### Japan

Ajinomoto Co., Inc.  
15-1 Kyobashi 1-chome, Chuo-ku,  
Tokyo 104-8315, Japan  
TEL:+81-(3)-5250-8150 FAX:+81-(3)-5250-8259

Ajinomoto Healthy Supply Co., Inc.  
17-11 Kyobashi 2-Chome, Chuo-ku,  
Tokyo, 104-0031 Japan  
TEL:+81-(3)-3563-7584 FAX:+81-(3)-3563-3322

### Asia Pacific

Taiso Commerce Inc.  
15th Floor, No.116, Sec.2 Nan King E. Rd.,  
Taipei, Taiwan  
TEL:+886-(2)-2521-0180  
FAX:+886-(2)-2521-5904

Ajinomoto (Singapore) Pte. Ltd.  
No.6, Senoko Avenue Singapore 758299,  
Republic of Singapore  
TEL:+65-6257-1922 FAX:+65-6257-1622

### North America

Ajinomoto U.S.A., Inc.  
400 Kelby Street, Fort Lee, NJ 07024, U.S.A.  
TEL:+1-(201)-292-3180  
FAX:+1-(201)-346-5638

Ajinomoto U.S.A., Inc.  
Los Angeles Office, 3460 Torrance Boulevard  
Suite #310, Torrance, CA 90503, U.S.A.  
TEL:+1-(310)-543-8600 FAX:+1-(310)-543-8601

Ajitrade (Thailand) Co., Ltd.  
12Ath Fl., Si Ayutthaya Bldg., 487/1 Si  
Ayutthaya Road, Khwaeng Thanon Phaya Thai  
Khet Rachathewi, Bangkok 10400, Thailand  
TEL:+66-(2)-248-7224 FAX:+66-(2)-248-7227

P.T. Ajinomoto Indonesia  
Jl. Laksda Yos Sudarso 77-78, Sunter,  
Jakarta 14350, Indonesia  
TEL:+62-(21)-65304455 FAX:+62-(21)-65304443

### South America

Ajinomoto Interamericana Indústria e  
Comércio Ltda.  
Rua Joaquim Távora 541, Vila Mariana,  
0415-901 São Paulo, SP, Brazil  
TEL:+55-(11)-5080-6820  
FAX:+55-(11)-5080-6739

Ajinomoto Co., (H.K.) Ltd.  
21/F., Bangkok Bank Building, 14-20 Bonham  
Strand West, Sheung Wan, Hong Kong  
TEL:+85-(2)-2534-2888  
FAX:+85-(2)-2534-2899

Ajinomoto (Malaysia) Berhad  
Lot 5710 Jalan Kuchai Lama Petaling 58200  
Kuala Lumpur, Malaysia  
TEL:+60-(3)-7980-7352 FAX:+60-(3)-7980-6817

### Europe, Africa & Middle East

S.A. Ajinomoto OmniChem N.V.  
Industrial Research Park-Fleming, B-1348  
Louvain-La-Neuve, Belgium  
TEL:+32-(10)-483-222 FAX:+32-(10)-456-227

Russia  
OOO "Ajinomoto"  
C-404, Leninsky Prospekt 113/1,  
Moscow, 117198, Russia  
TEL:+7-(095)-956-52-00 FAX:+7-(095)-956-52-14

Ajinomoto Philippines Corporation  
5th Floor, Ajinomoto Bldg, 331 Sen. Gil Puyat  
Avenue, Makati City, Philippines  
TEL:+63-(2)-895-6081  
FAX:+63-(2)-890-7959

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