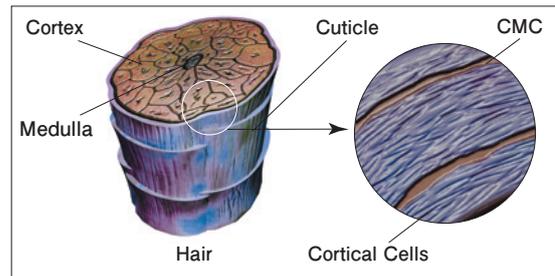


Amino Acid Based Humectant PRODEW® 500

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.

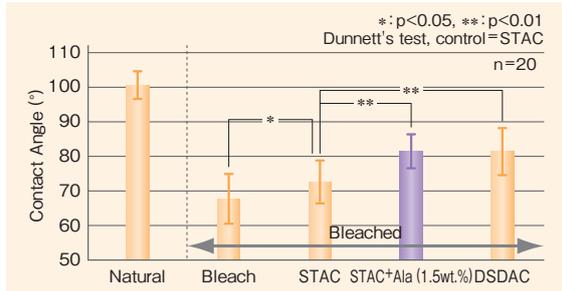
Characteristics

● 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

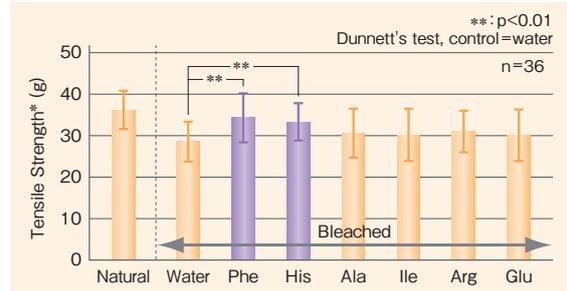
● **Damage Care by Various Amino Acids**

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
TS data 3000-0380E

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



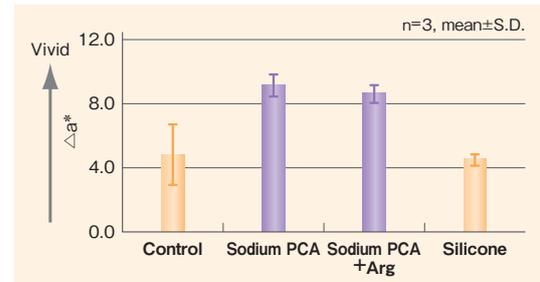
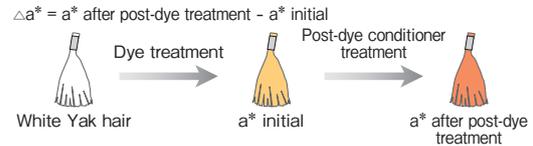
Method : Japanese hair, bleached 4 times
Amino acid 2wt.% aq. 3min. immersion. / 1min. rinse 35°C
Stress at 20% extension measured in water

● **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



TS data 1001-0680E

Material Information

Product Name	Product Code	Chemical Name	CAS No.	Physical Form	Packaging	PCPC INCI Name	Composition (%)
PRODEW®	500	Sodium L-Pyrrolidone Carboxylate	28874-51-3	50% Aqueous Solution	25kg Drum	Sodium PCA	15.00
		Sodium Lactate	72-17-3			Sodium Lactate	12.00
		L-Arginine	74-79-3			Arginine	8.00
		L-Aspartic Acid	56-84-8			Aspartic Acid	5.20
		L-Pyrrolidonecarboxylic Acid	98-79-3			PCA	4.27
		Glycine	56-40-6			Glycine	1.28
		L-Alanine	56-41-7			Alanine	1.20
		L-Serine	56-45-1			Serine	0.80
		L-Valine	72-18-4			Valine	0.64
		L-Proline	147-85-3			Proline	0.40
		L-Threonine	72-19-5			Threonine	0.40
		L-Isoleucine	73-32-5			Isoleucine	0.40
		L-Histidine	71-00-1			Histidine	0.16
		L-Phenylalanine	63-91-2			Phenylalanine	0.16
		Water	7732-18-5			Water	balance

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