

PRODEW[®] 500
The Amino Acid supplement for Hair Care

ASP0051E

AJINOMOTO[®]

Line Up **PRODEW**®

- **PRODEW**® 300... A combination of Na-PCA & Proline
- **PRODEW**® 400... Skin Amino Acids
- **PRODEW**® 500... Hair Amino Acids

PRODEW[®] 500

- **PRODEW[®] 500** is amino acids cocktail, designed for the efficient application of PCA and amino acids in hair care preparation.

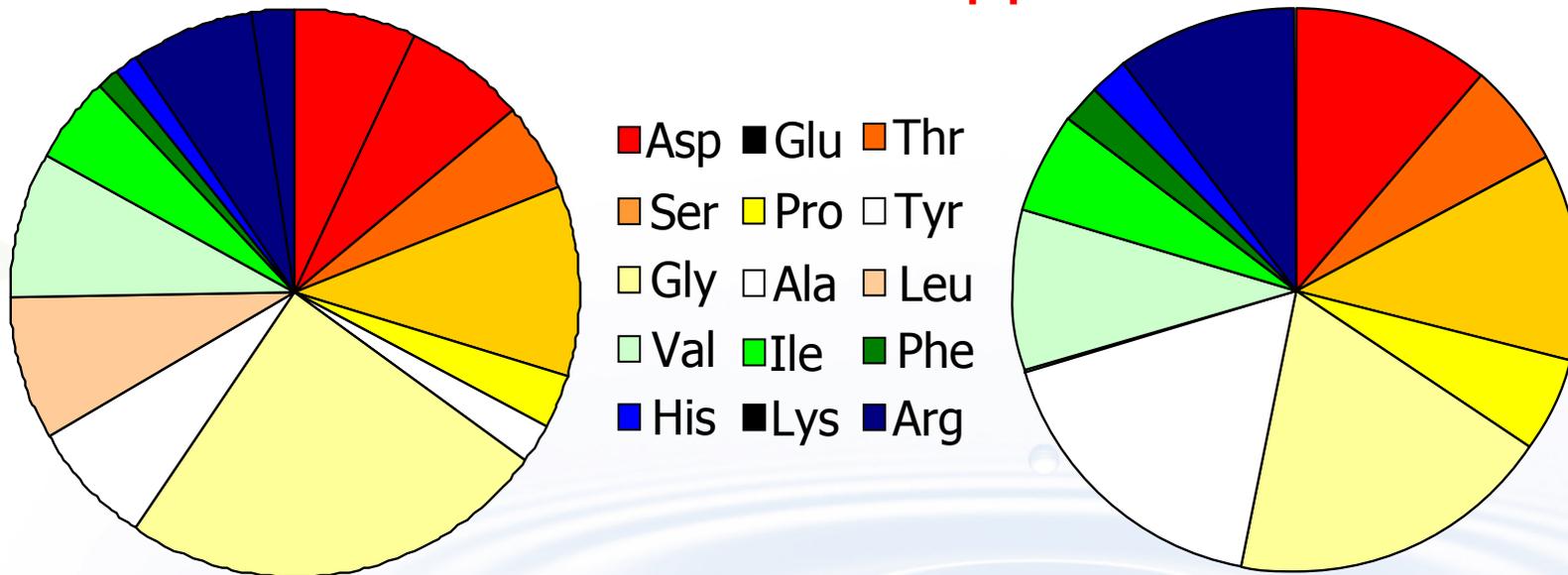
Components	Concentration
Sodium PCA and PCA	20
Arginine	7
Amino Acids Mix	7
Sodium Lactate	12
Aspartic Acid	4
Water	50

PRODEW[®] 500 - Composition

- 18% high quality amino acids premix..
- ... of 11 kinds of amino acids = easy to handle
- 32% humectant
- Almost odorless and colorless
- Preservative free

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).
- **Amino Acids Penetration and Supplementation**



Constituent amino acids of protein in CMC*

Amino Acids Mix of **PRODEW®** 500

*Cys and Met are excluded.

J. A. Swift et. al., *Journal of Society of Cosmetic Chemist*, **25**, 355,(1974)

Cell Membrane Complex



- Intercellular cement for cuticle and cortex
- Non-keratinous region

- Continuous structure from surface
- Responsible for swelling of hair

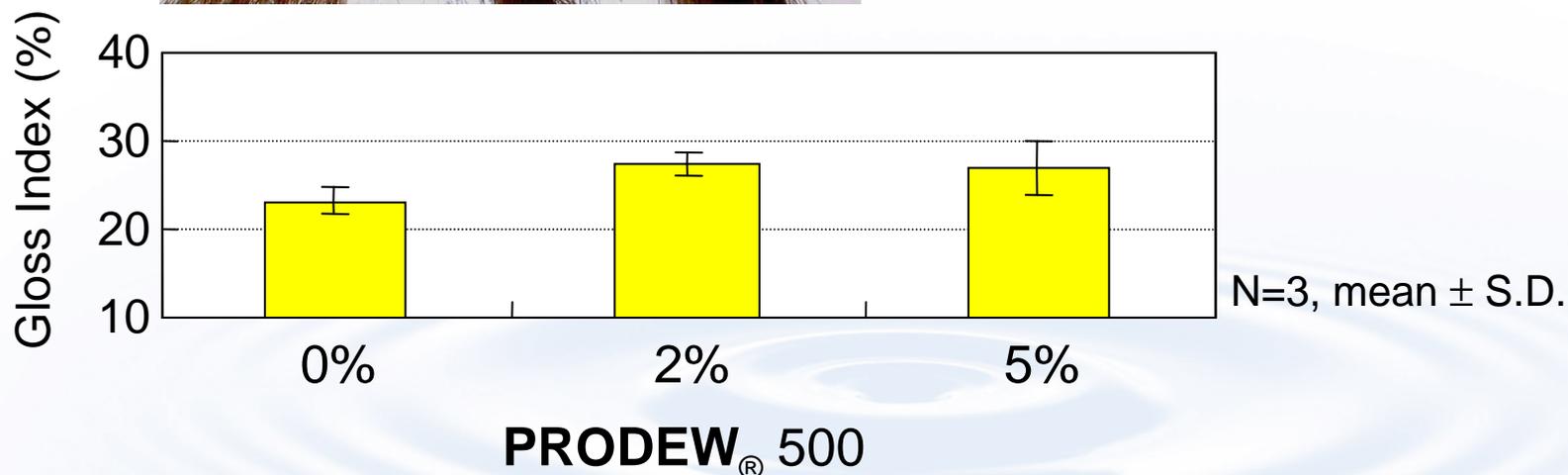
Similar composition
...easier to penetrate ?

- Target of alkali, oxidant, and reductant
- Destroyed by 10 - 20% extension - decementation

Likely to be lost
...then replenish !

Improvement of Hair Luster by **PRODEW**[®] 500

- **PRODEW**[®] 500 imparts luster and brilliant appearance to hair.



Designing **PRODEW**[®] 500



Components	Concentration	
Sodium PCA and PCA	20	← Part 1
Arginine	7	← Part 2
Amino Acids Mix	7	← Part 3
Sodium Lactate	12	
Aspartic Acid	4	
Water	50	

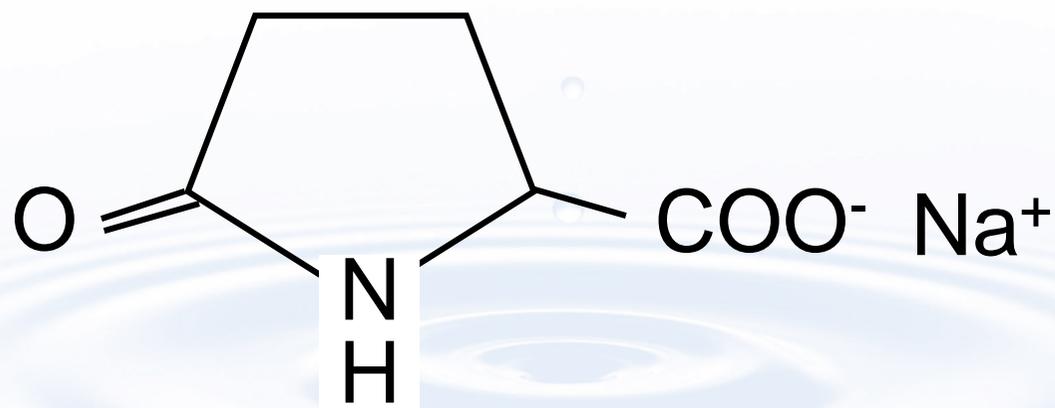
The background features a soft-focus image of green leaves and stems on the left and right sides. In the center, there are several water droplets falling into a pool of water, creating concentric ripples. The overall color palette is light blue and green.

Designing **PRODEW**[®] 500

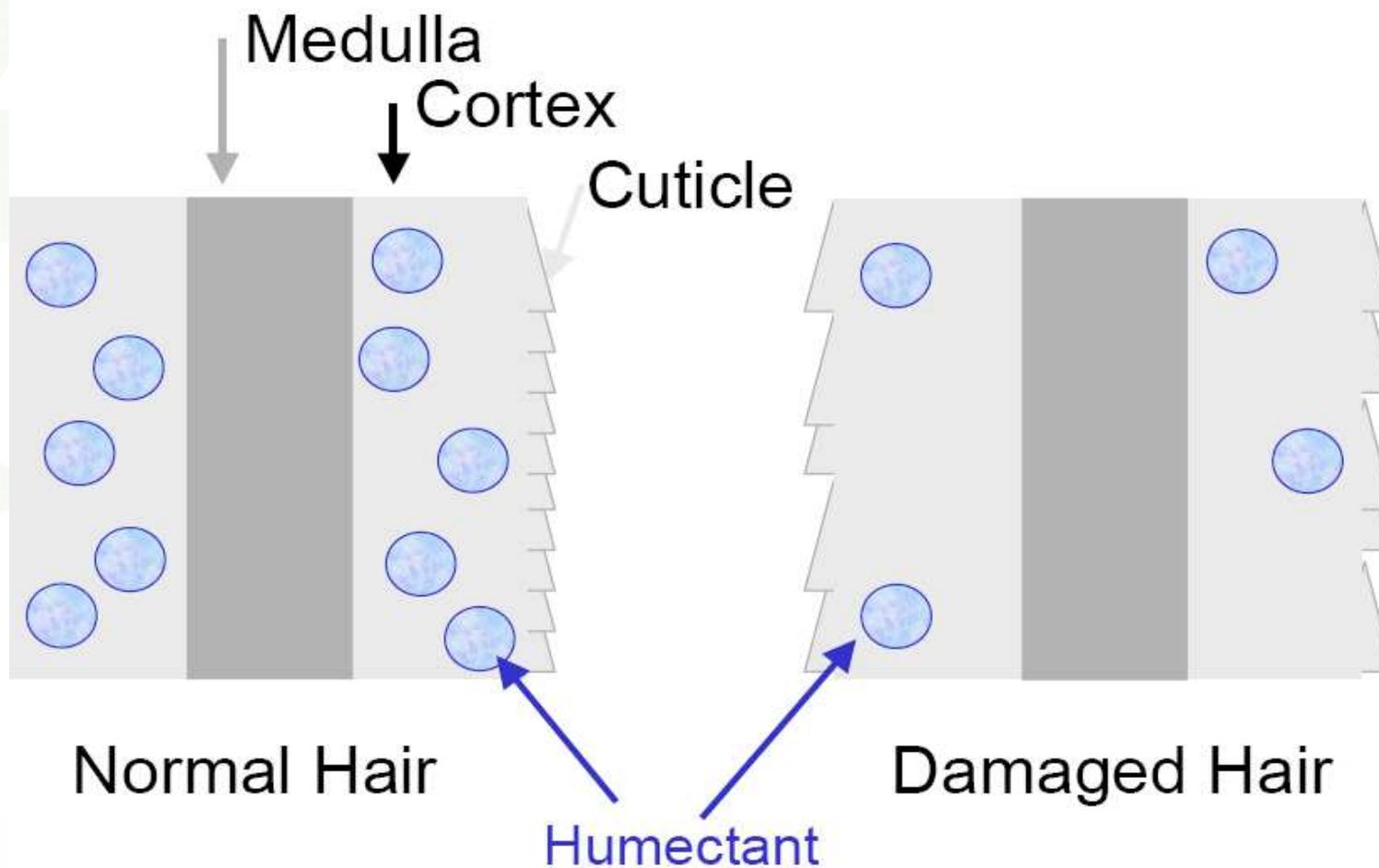
Part 1 : HUMECTANT: PCA

Sodium PCA (**AJIDEW**® NL-50)

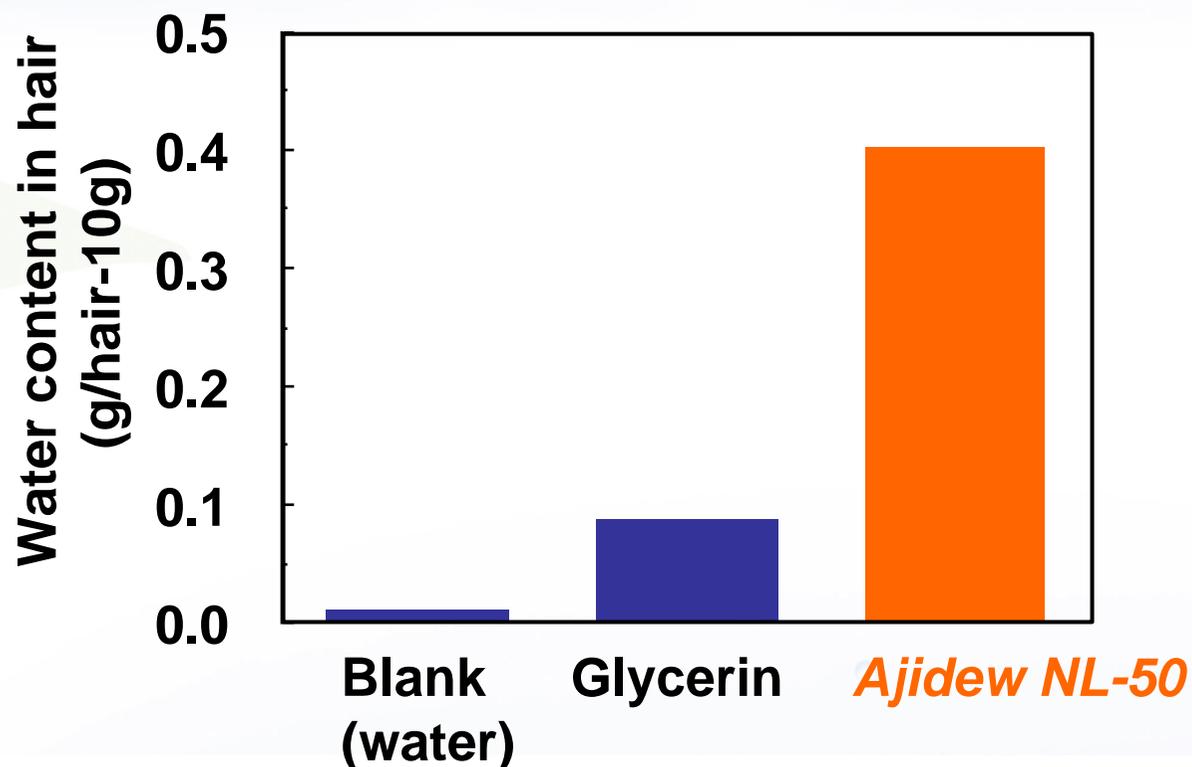
- PCA is derived from L-Glutamic acid in the skin.
- Sodium PCA for hair care
 - **Moisturizing**
 - **Conditioning**
 - **Color protection**



Humectant for health hair



AJIDEW NL-50 : Effective moisturizer for hair



<Procedure>

After hair tresses (15cm, 6g) were immersed in each humectant solution for 5 min., they were dried under 20°C/65%RH, then the amount of absorbed water in hair tresses was measured by weight.

Water adsorption mass on hair = (B) – (A) – (C)

(B) : Weight of hair tress after maceration (65 % RH)

(A) : Before maceration (65 % RH)

(C) : Weight of moisturizer sorbed on hair

Technical data sheet 1001-0133

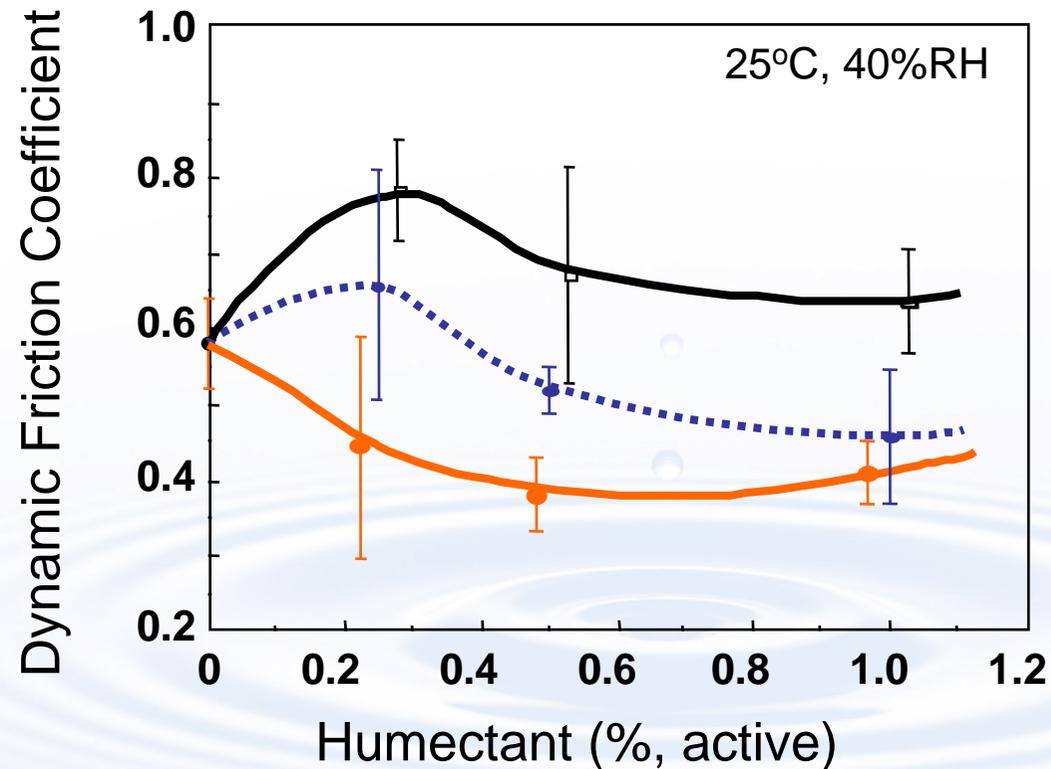
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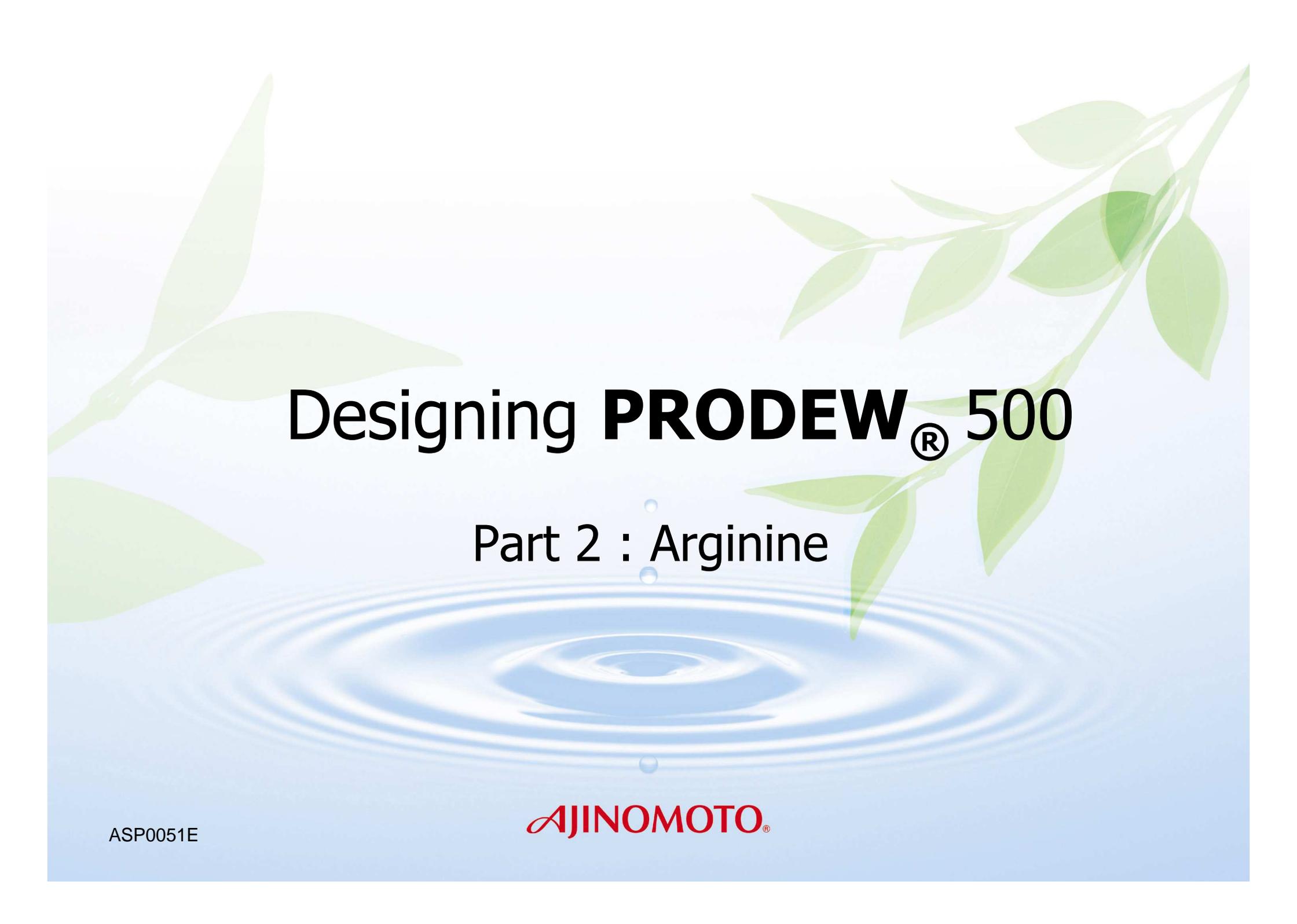
Wet friction reduction with *AJIDEW* NL-50

- *AJIDEW* NL-50 reduces the creakiness of hair.

- 1%SLES+1,3-BG
- 1%SLES+Glycerin
- 1%SLES+*AJIDEW* NL-50

creaky



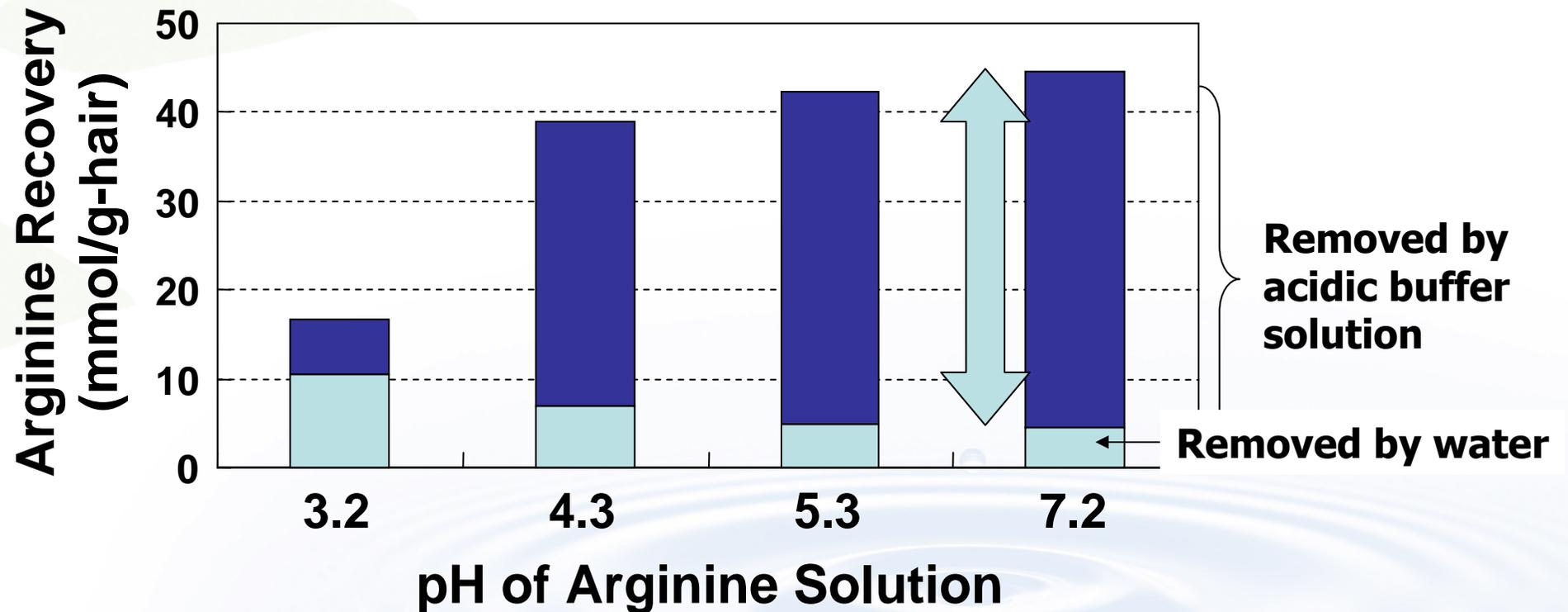
The background features a light blue gradient with several green leaves and stems floating in the air. Below the leaves, there are concentric ripples on a light blue surface, suggesting water. The overall aesthetic is clean and natural.

Designing **PRODEW**[®] 500

Part 2 : Arginine

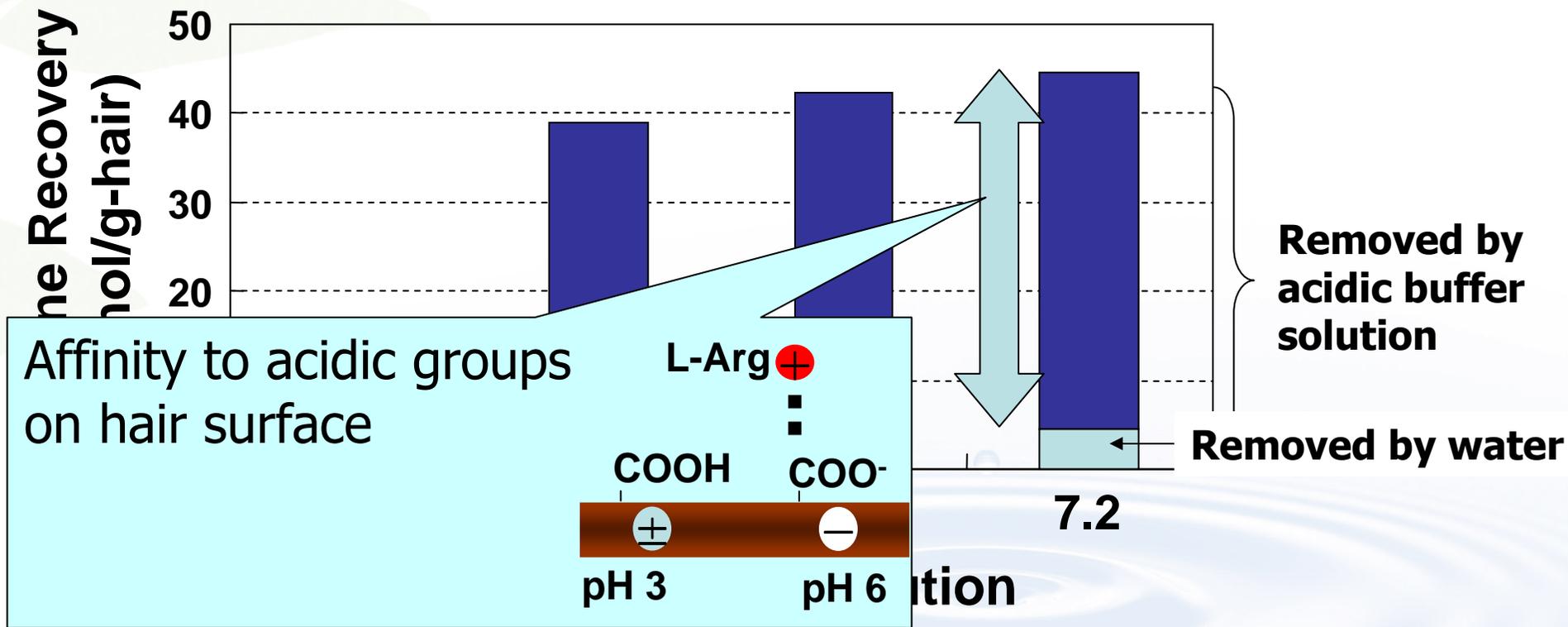
Arginine Has Strong Affinity for Hair

- Arginine bears cationic charge below $pK_2=9.0$, so has strong affinity for hair at pH over about 4.



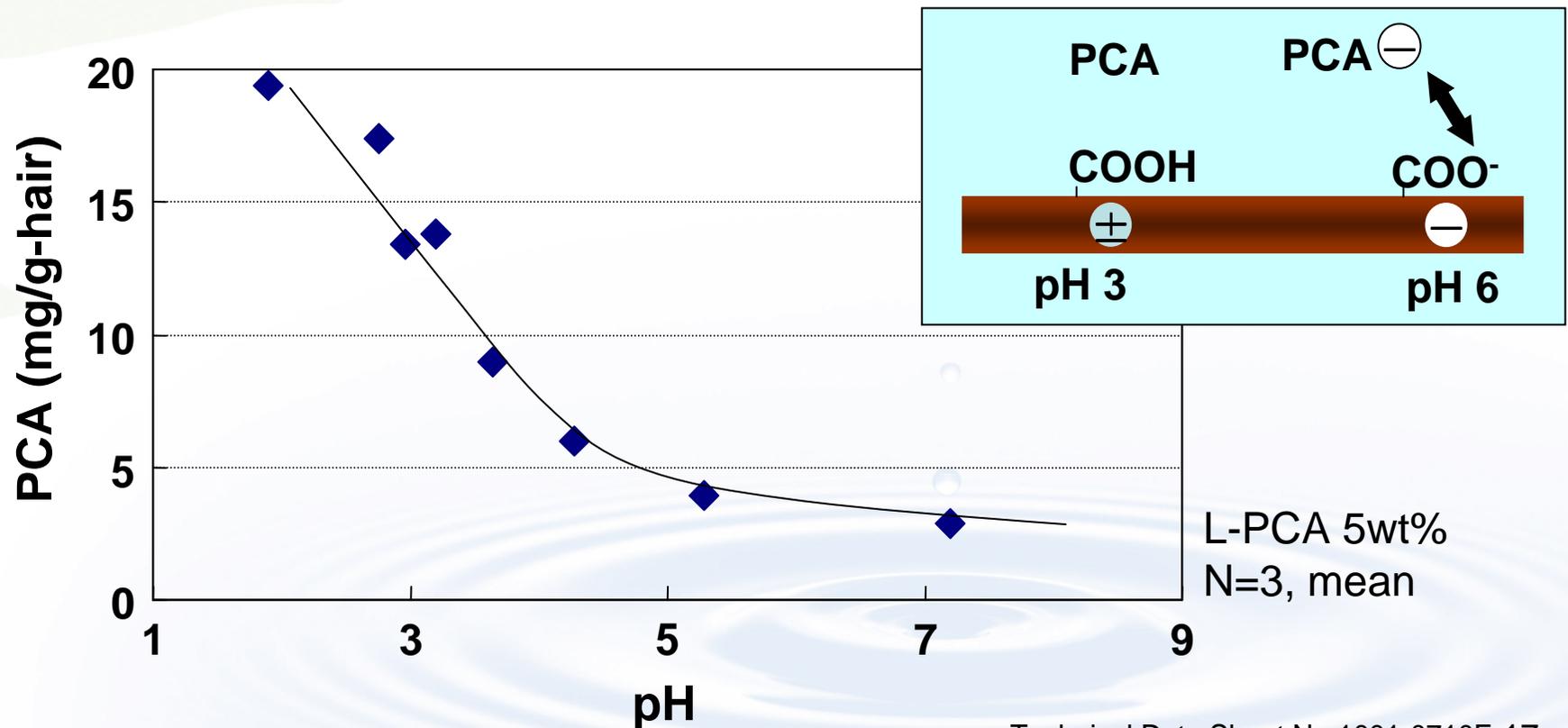
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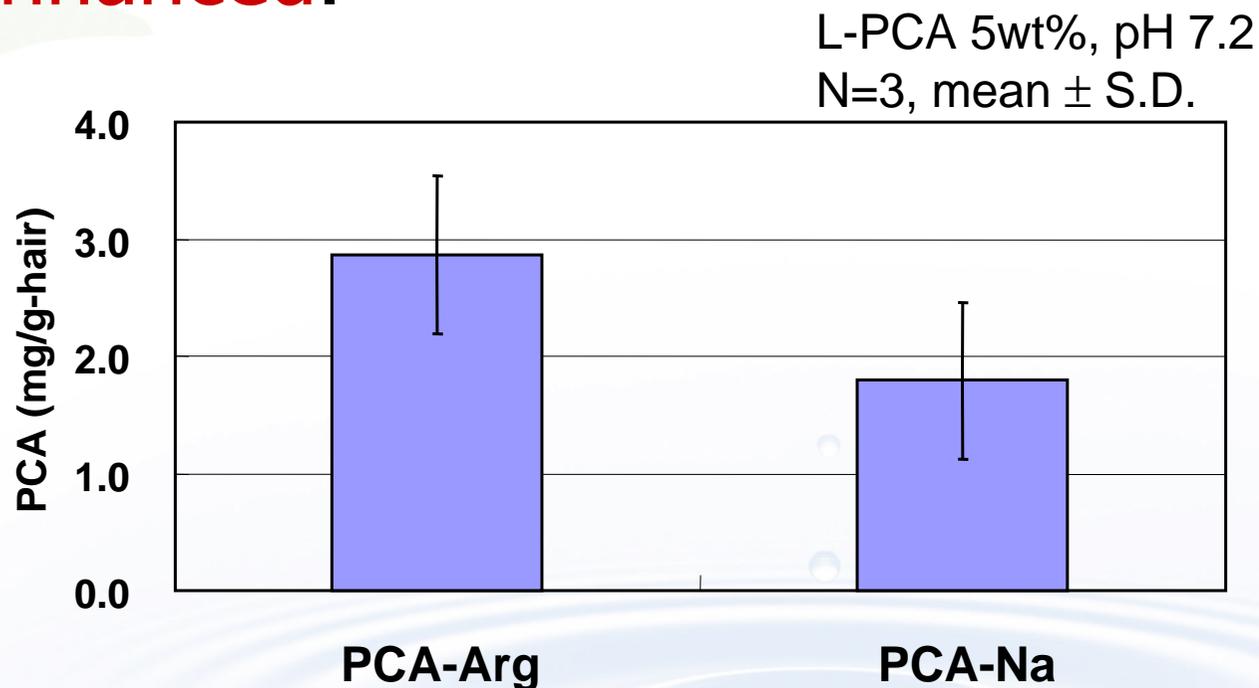
Uptake of PCA –the pH Dependence

- Interaction of PCA and hair is relatively weak at pH range between 4 and 7.



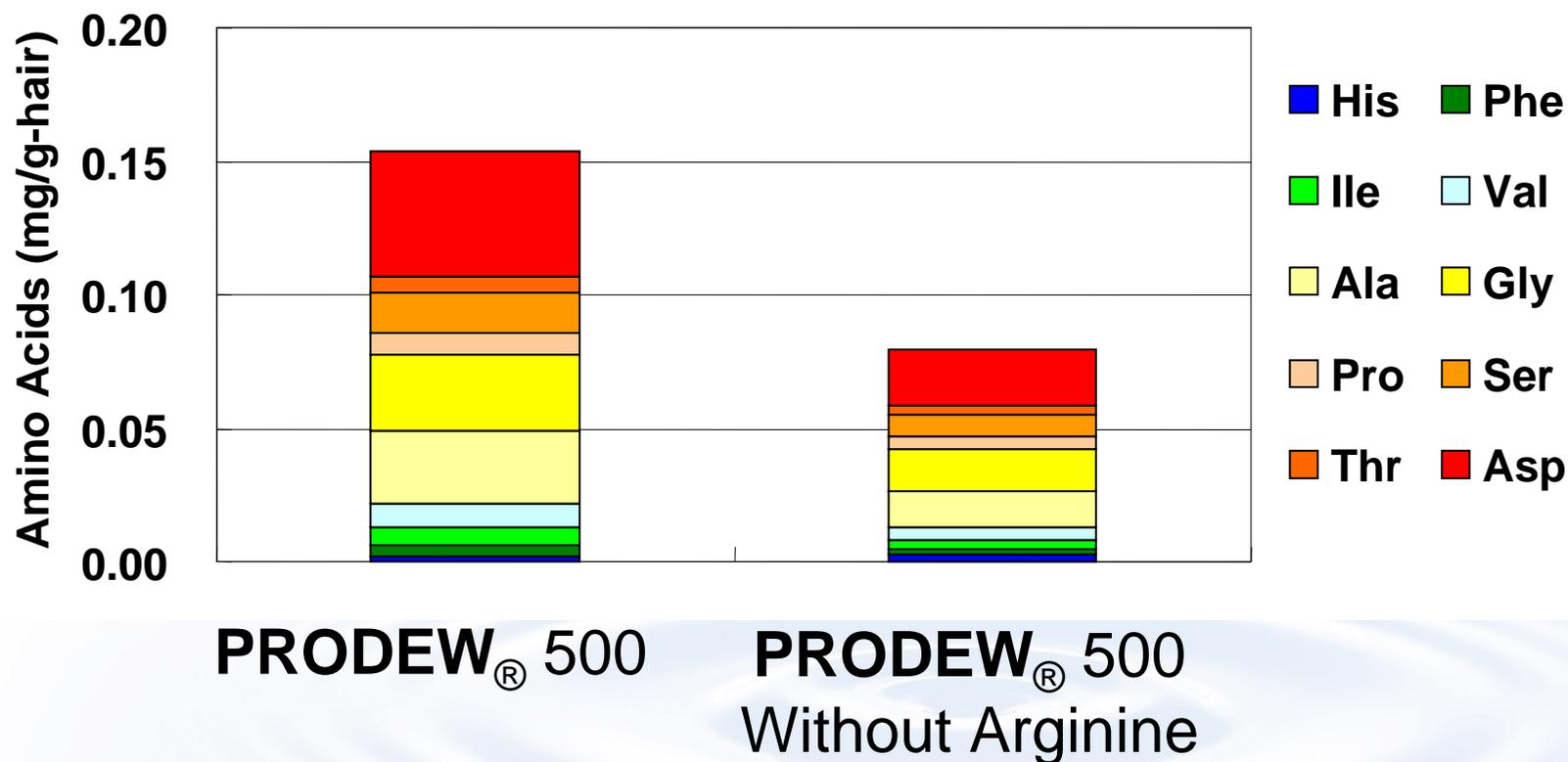
Use of Arginine as an “Anchor” -1

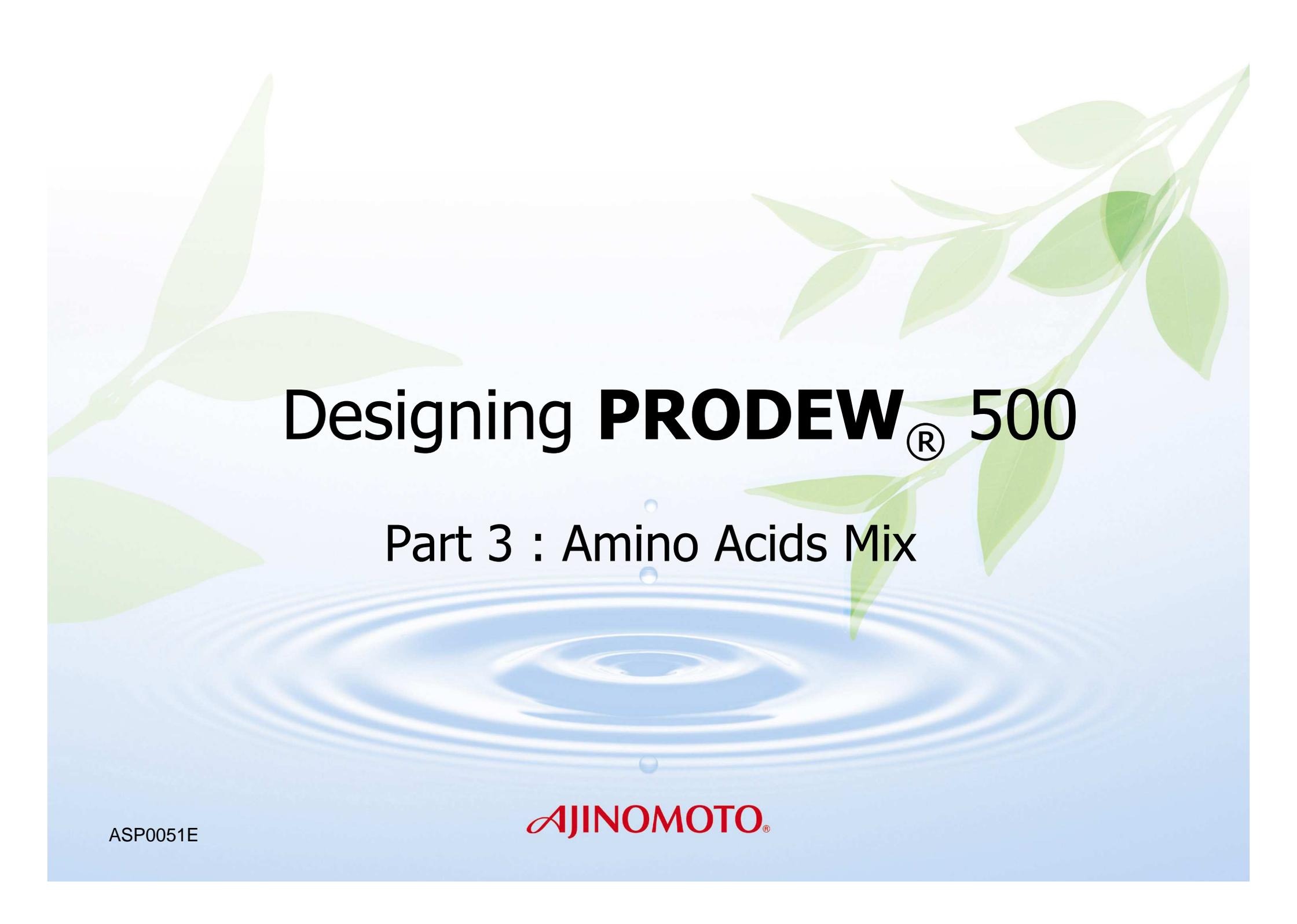
- By combination with Arginine the uptake of PCA is enhanced.



Use of Arginine as an "Anchor" -2

- Arginine also enhances the uptake of acidic and neutral amino acids.



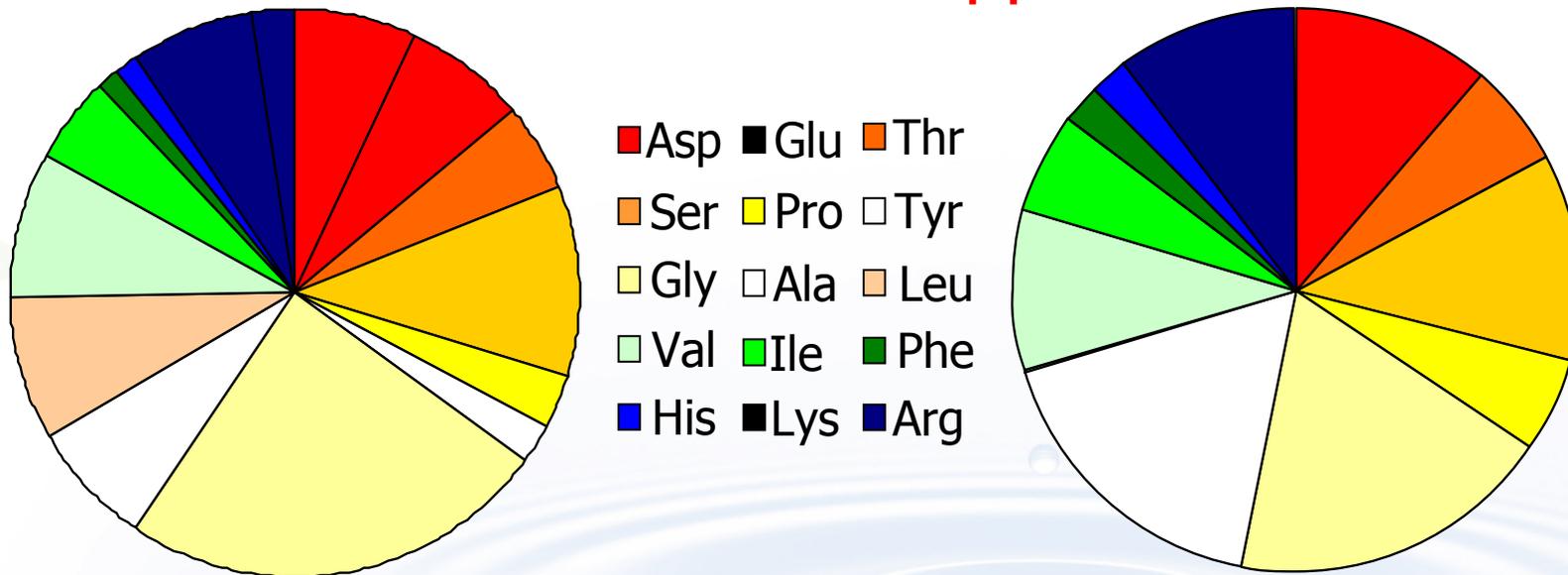
The background features a light blue gradient with faint green leaves and a central water ripple effect. The text is centered over this background.

Designing **PRODEW**[®] 500

Part 3 : Amino Acids Mix

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).
- Amino Acids Penetration and Supplementation



Constituent amino acids of protein in CMC*

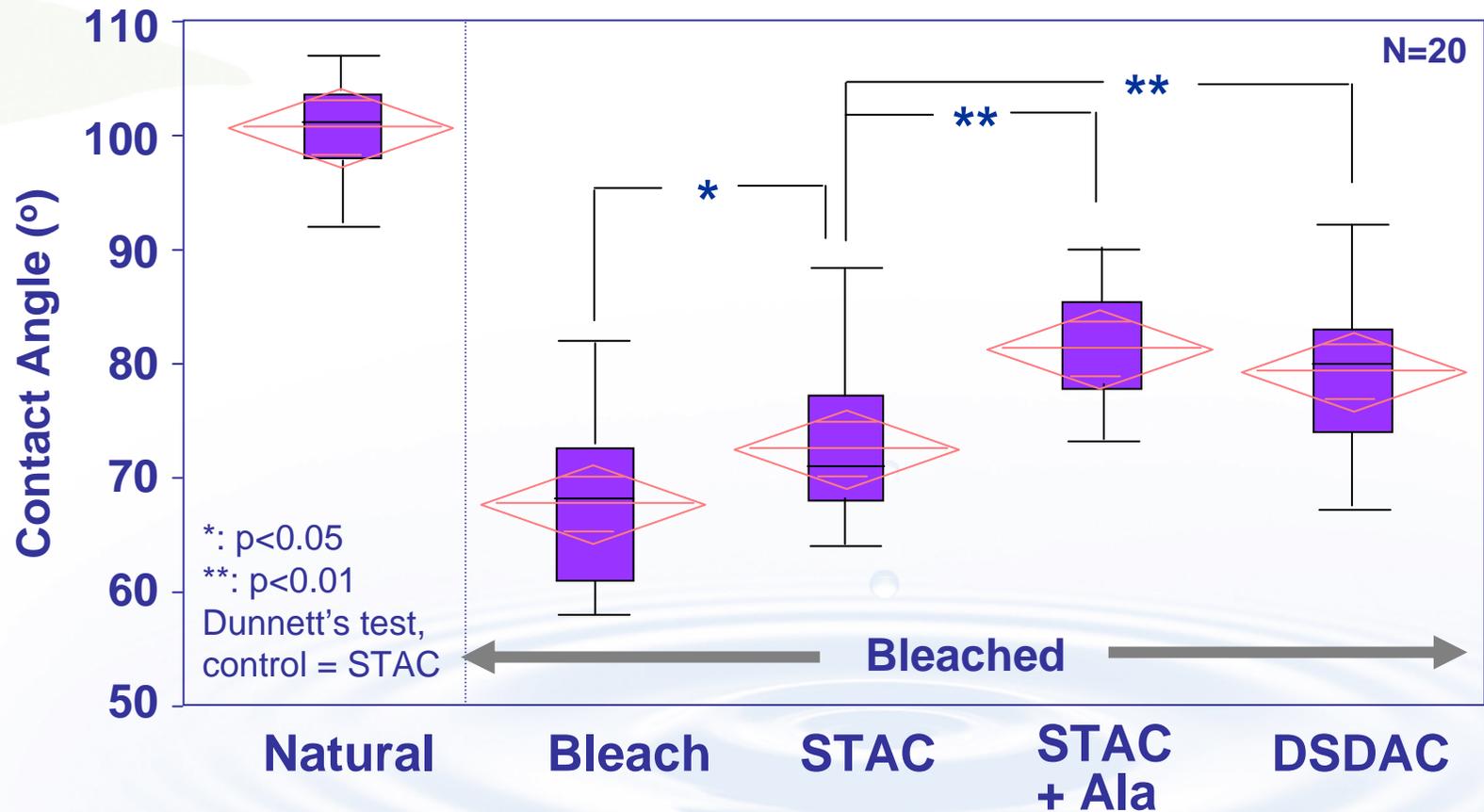
Amino Acids Mix of **PRODEW**® 500

*Cys and Met are excluded.

J. A. Swift et. al., *Journal of Society of Cosmetic Chemist*, **25**, 355,(1974)

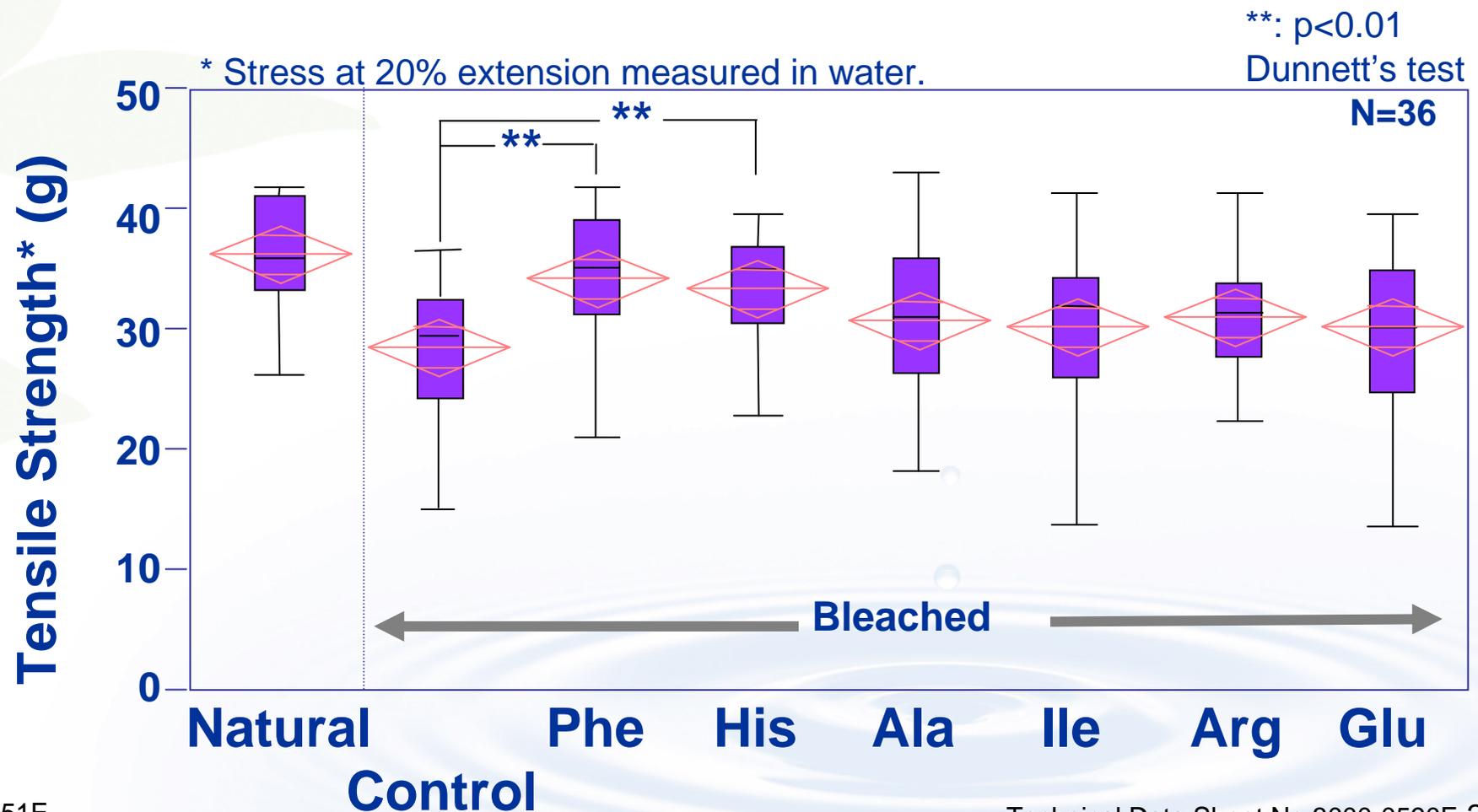
Improvement of Surface Hydrophobicity

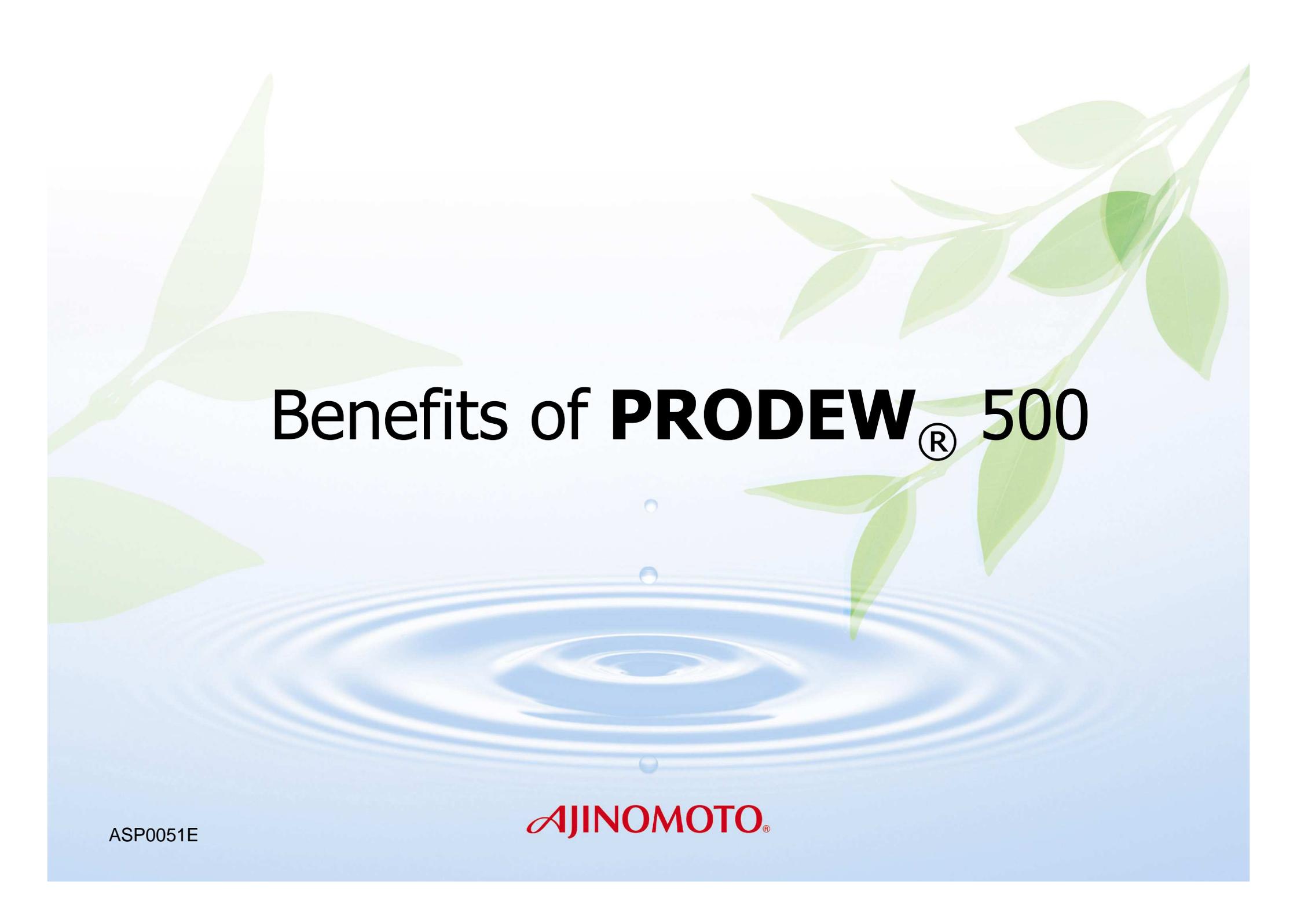
- Alanine



Improvement of Tensile Strength

- Histidine and Phenylalanine





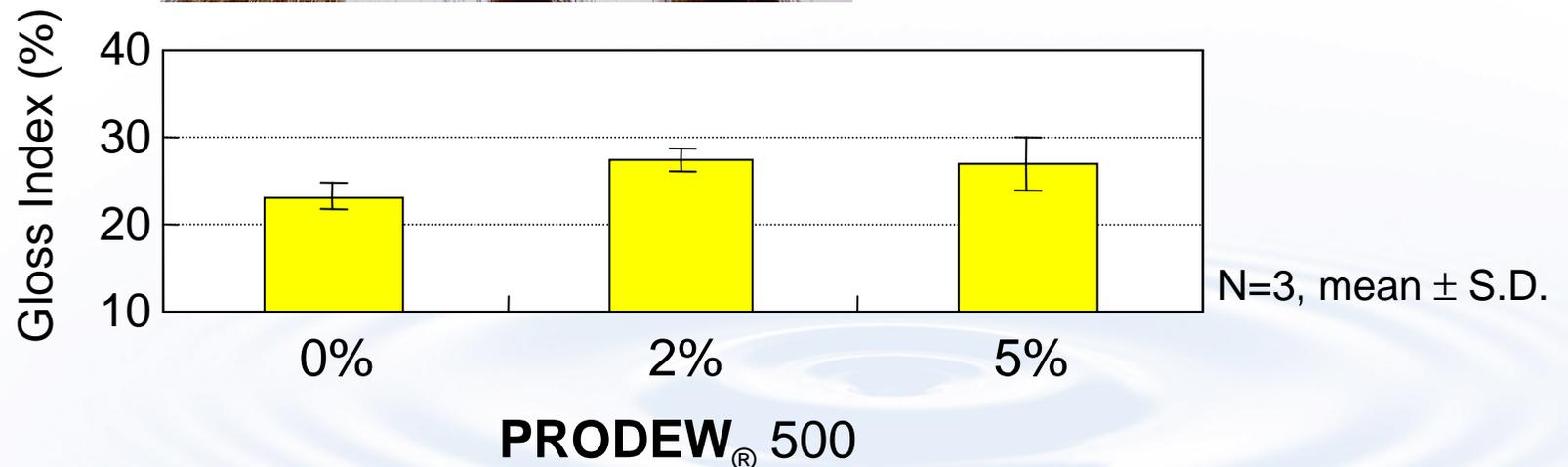
Benefits of **PRODEW**[®] 500

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Improvement of Hair Luster by **PRODEW**[®] 500

- **PRODEW**[®] 500 imparts luster and brilliant appearance to hair.



PRODEW® 500 – Amino Acid Supplement

- Sodium PCA and PCA
 - Moisturizing, conditioning, color protect
- Arginine (basic amino acids)
 - Enhances PCA and amino acids uptake
- Arginine & Aspartic Acid (acidic and basic amino acids)
 - Improve wet hair property
- Neutral amino acids
 - Improve dry hair property
- Sodium Lactate
 - Moisturizing, softening

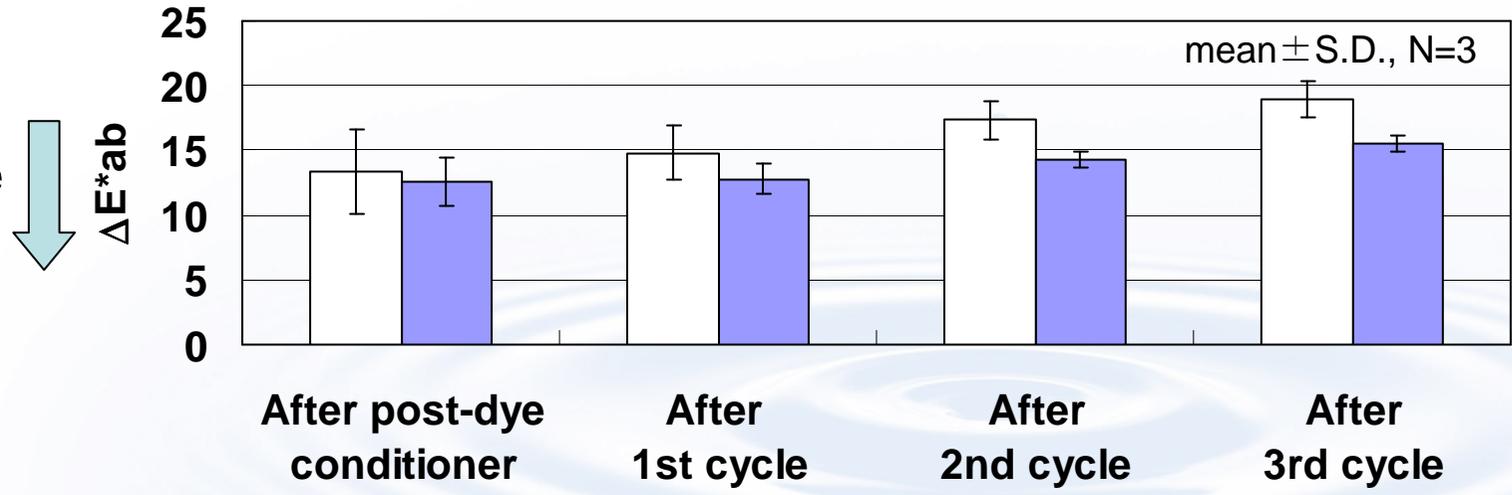
PRODEW® Improved color retention of died hair

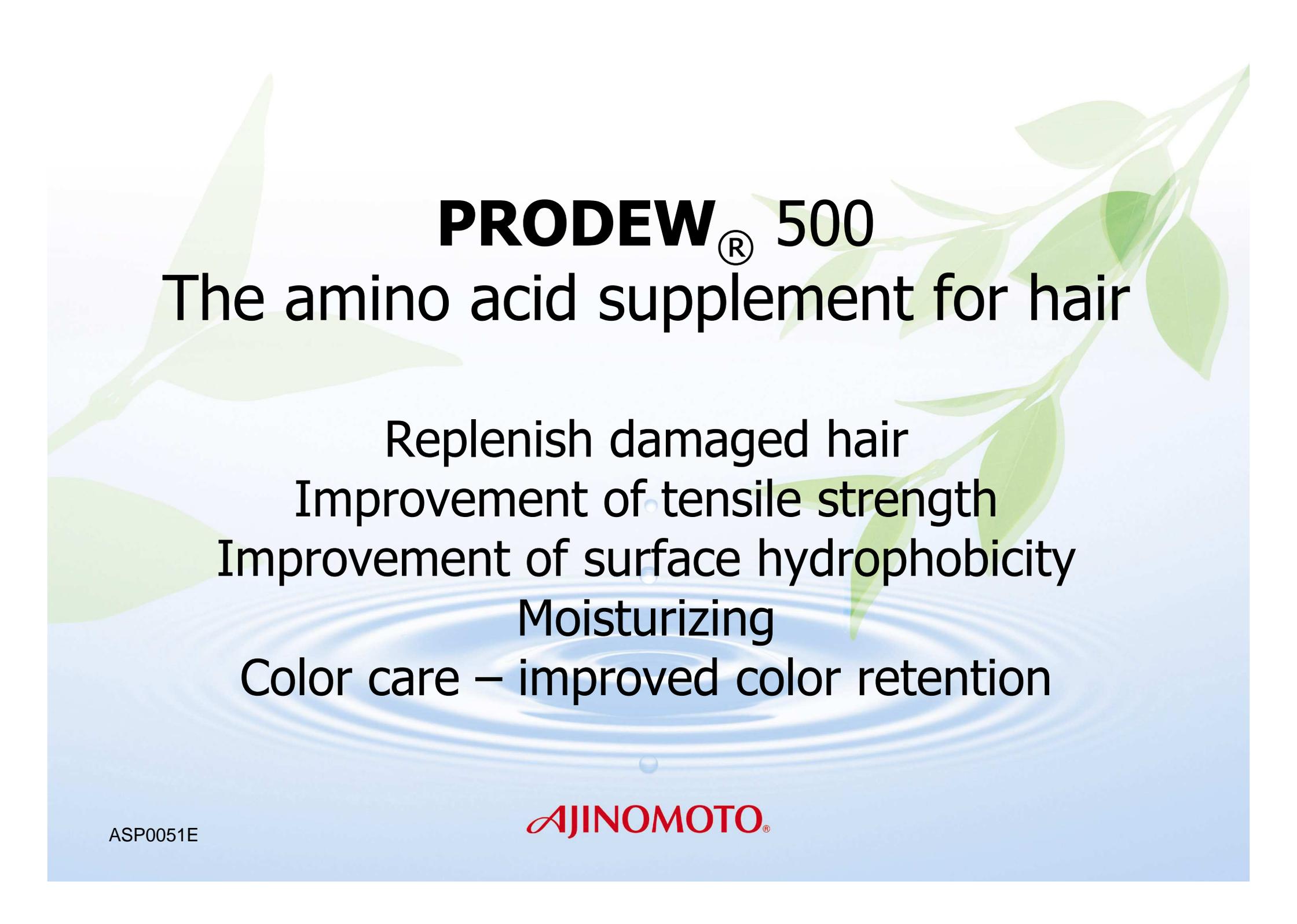


ASUL-4025
&
PDC-0003

Without **PRODEW**® With **PRODEW**®

Hard to fade





PRODEW[®] 500

The amino acid supplement for hair

Replenish damaged hair
Improvement of tensile strength
Improvement of surface hydrophobicity
Moisturizing
Color care – improved color retention

TIPS for Formulation with **PRODEW**® 500

- Recommended dose
 - 0.5 – 5.0% for rinse-off formulations
 - 0.2 – 2.0% for leave-on formulations.
- The pH of is around 5, suitable for wide range of formulations
- Addition to **anionics/ amphoteric base formulations** (i.e. shampoos) are not difficult at all.
- Addition to **emulsions** are likely to cause the severe viscosity decrease due to high content of PCA-Na, but emulsion is possible.
- Addition to **alkaline formulations** such as waving lotion or dye component is not necessarily recommended, because PCA is not so stable at highly alkaline condition.



Applications of **PRODEW**[®] 500

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Recommended Applications

- Hair shampoos
- Hair conditioners
- Post-dye conditioners for pH control
- Hair masks
- **Hair sprays**
- **Hair styling gels**
-

Hair treatment water

Category	Conditioning / Hair / Styling
Sales Company	Utena
Manufacturer	Utena
Brand Name	Amino Tank
Product Name	Hair Treatment water
Country, sold	Japan



1. WATER
2. ALCOHOL
3. DIPROPYLENE GLYCOL
4. PPG-14 DIGLYCERYL ETHER
5. **SODIUM PCA**
6. **SERINE**
7. **GLYCINE**
8. **GLUTAMIC ACID**
9. **ALANINE**
10. **LYSINE**
11. **ARGININE**
12. **THREONINE**
13. **PROLINE**
14. SORBITOL
15. **BETAINE**
16. AMODIMETHICONE
17. C12-14 PARETH-12
18. LACTIC ACID
19. SODIUM LACTATE
20. SODIUM BISULFITE
21. CETETH-20
22. METHYLPARABEN
23. FRAGRANCE

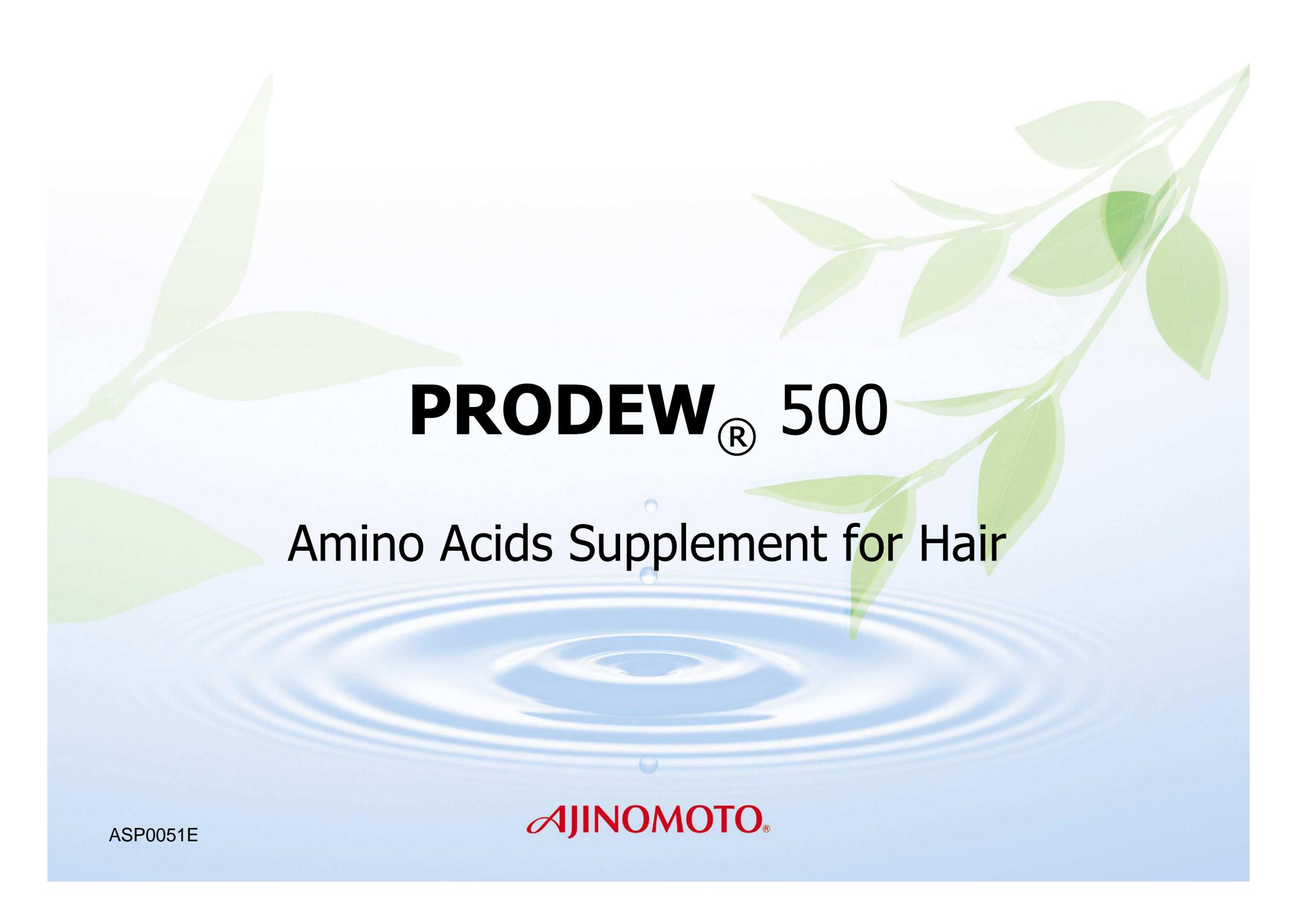


Dream hair shining star

1. ALCOHOL DENAT.
2. CYCLOMETHICONE
3. PPG-2-CETEARETH-9
4. PHENYL TRIMETHICONE
5. DIMETHICONE COPOLYOL MEADOWFOAMATE
6. BENZOPHENONE-4
7. WATER
8. PERFUME (not INCI, but rule to be treated like INCI here)
9. PANTHENOL
10. PROPYLENE GLYCOL
11. LANETH-15
12. **BETAINE**
13. **SODIUM PCA**
14. TOCOPHERYL ACETATE
15. SORBITOL
16. **SERINE**
17. B3684 / 1 (not INCI)
18. C10-30 CHOLESTEROL / LANOSTEROL ESTERS
19. **GLYCINE**
20. PHENOXYETHANOL
21. **GLUTAMIC ACID**
22. **LYSINE**
23. **ALANINE**
24. **ARGININE**
25. METHYLPARABEN
26. **THREONINE**
27. **PROLINE**
28. BUTYLPARABEN

Category	Conditioning / Hair / Styling
Sales Company	Charles worthington
Manufacturer	*UNKNOWN*
Brand Name	Charles worthington
Product Name	Dream hair shining star
Country, sold	Great Britain

ASFOUJIE

The background features a soft-focus image of green leaves on the left and right sides. In the center, there are several concentric ripples on a light blue surface, suggesting a water droplet has just fallen. The overall color palette is light and fresh, with various shades of green and blue.

PRODEW[®] 500

Amino Acids Supplement for Hair

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