



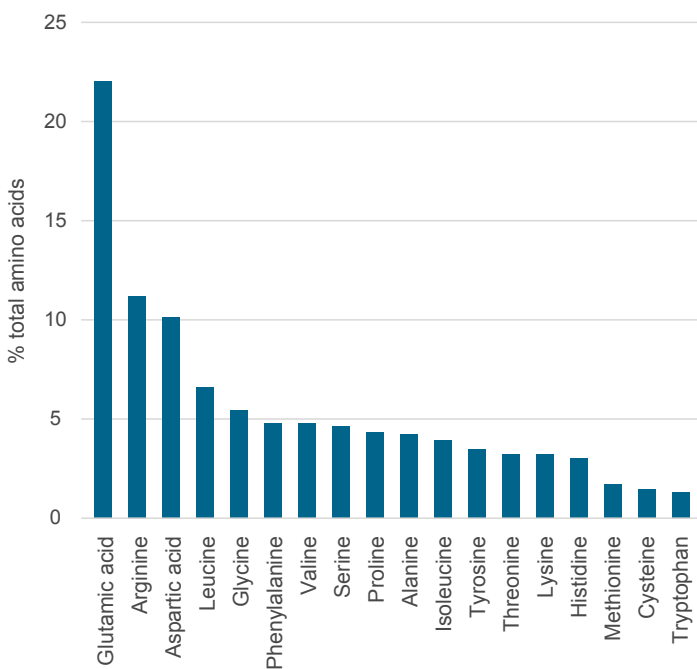
Beyond Protein

Karmyn™ protein, a native high molecular weight (~250 - 300KD) safflower storage protein, plays an important role in equipping a seed for survival and preventing denaturation. Using a patented process, Karmyn™ protein is extracted from the seed in its whole, undamaged state. No harsh chemicals or enzymes are used in this process, providing a highly sustainable, plant-based protein solution.

This non-hydrolyzed, water-dispersible protein contains all essential amino acids and residual associated lipids (mainly Omega-9 fatty acids). A number of benefits can be attributed to Karmyn™ protein's unique amino acid profile including its naturally high levels of arginine, known to deliver benefits like hair strengthening and damage prevention.

At low pH (3.5 - 4), Karmyn™ protein undergoes an "internal restructuring", without loss of integrity, which facilitates its ability to bind to other protein substrates, such as skin and hair, offering natural, functional protective benefits.

Typical Amino Acid Profile of Karmyn™ Protein

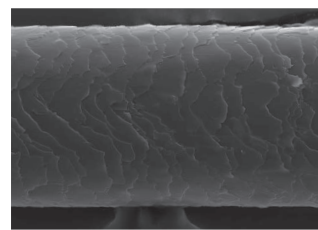


Revolutionary Benefits

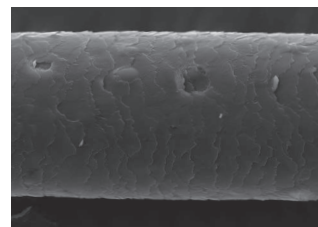
Karmyn™ was built to survive inside the safflower seed where it plays a part in protecting the germplasm from harsh winters and adverse environmental conditions. Its natural protective qualities thereby help the skin and scalp counter stressful and dry environmental conditions. Whereas, in higher humidity conditions, Karmyn™ delivers benefits by smoothing down the hair fibers and providing long term protection.

Hair Fiber Protection Study

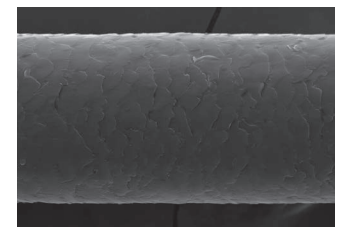
When used in a shampoo and conditioner pre-treatment system, Karmyn™ helps to protect the hair from damage caused by chemical treatments. In a study, Asian hair washed with a shampoo and conditioner containing 0.5% Karmyn™ was subjected to treatment with 6% hydrogen peroxide. SEM images were taken of the control and test hair strands before and after treatment with 6% hydrogen peroxide. The hair washed and conditioned with the Karmyn™ formulation shows less damage to the hair cuticle and greater hair integrity after being treated with hydrogen peroxide.



Untreated Hair



Control Formulations + 6% Hydrogen Peroxide



Karmyn™ Formulations + 6% Hydrogen Peroxide

Fig 1: SEM images of Asian hair: untreated, pretreated with control formulations and pretreated with 0.5% Karmyn™ formulations.

Hair Color Retention Study

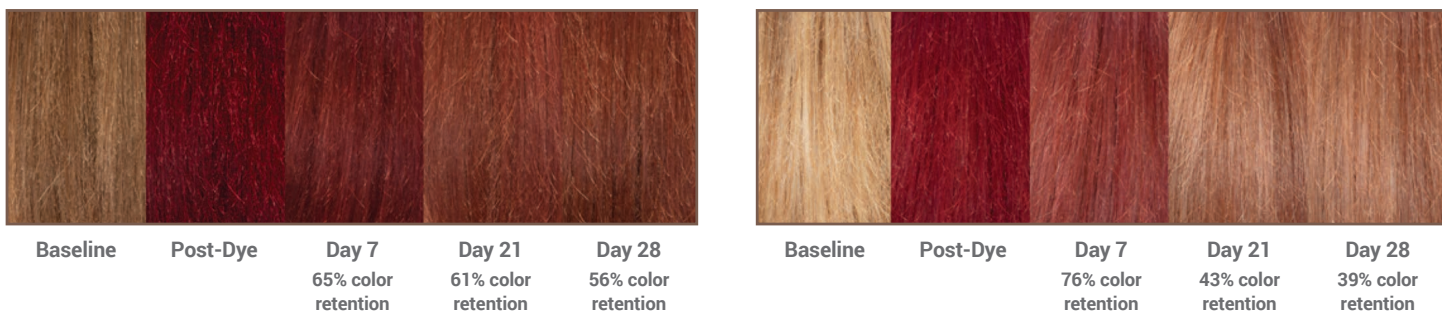


Fig 2: High resolution images showing hair color retention in two panelists using a 2% Karmyn™ conditioner

Karmyn™ has demonstrated excellent color retention in dyed hair. In a nine-person study, Karmyn™ was tested at 2% in a conditioner formulation, used daily after shampooing on freshly dyed hair. Images and measurements were taken for the test and the control before dyeing, immediately post-dyeing, and then 7, 21 and 28 days after dyeing. Measurements derived from the two high resolution sets of images (above) indicated that 71% of the color was retained

after seven days of washing, 52% of color was retained after 21 days of washing and 48% of color was retained after 28 days of washing. Chromameter results from the entire panel demonstrated that throughout the study the panelists that used the Karmyn™ conditioner showed less difference in hair color, indicating improved color retention.

Chromameter Data

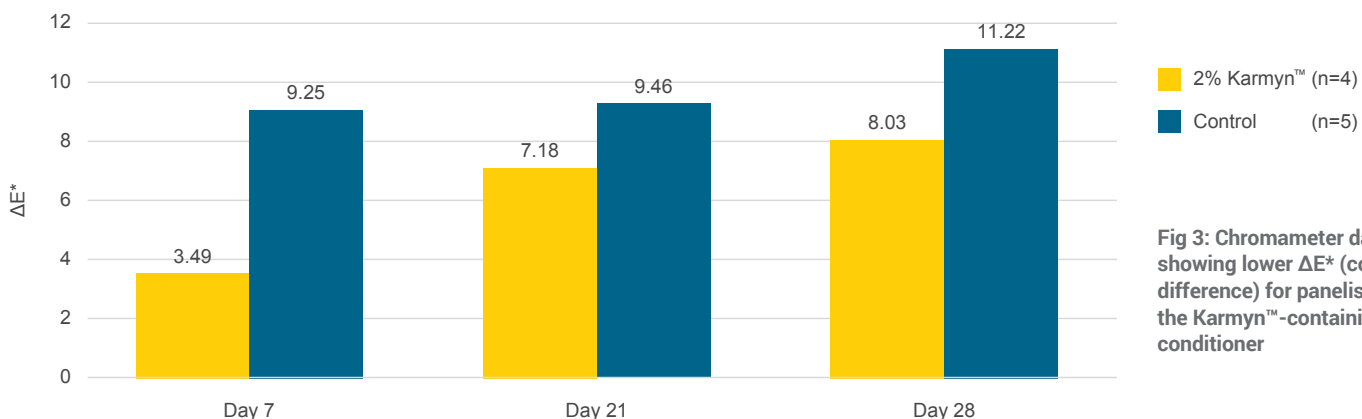


Fig 3: Chromameter data showing lower ΔE^* (color difference) for panelists using the Karmyn™-containing conditioner

INCI	<i>Carthamus Tinctorius</i> (Safflower) Seed Extract
Appearance	Tan Powder
Odor	Slight, Characteristic
Use Levels	0.5 - 2%
Function	Protective Protein
Main Applications	Shampoos, Conditioners & Treatments

Karmyn™ Formulary Facts

- Karmyn™ is water-dispersible. Before adding, pre-disperse, at low shear, required amount of Karmyn™ in a recommended solvent (Glycerin, 1,2-Propanediol, Propylene Glycol).
- Do not heat formulations containing Karmyn™ above 60° C.