

• HEALTH AND PERSONAL CARE •



BERACARE “ARS” HAIR SYSTEM “ACTIVE RESTORE SYSTEM”

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1. INTRODUCTION

1.1 HUMAN HAIR

Hairs are important sense organs, particularly those on the eyelids and eyebrows, since they are involved in the sensation of touch.

People all over the world see hair as important, because the hairs express personalities – to conform, to make a statement, to help feel good, to attract other people.

Sometimes the hair even seems to reflect mood, especially when the people are sad or depressed.

The hair is perhaps the most distinctive feature.

Hair is an amazing material.

There are great variations between the hairs, different people have different hair and differ in color, in length, in diameter and distribution on the body.

1.2 TYPES OF HAIR

The range of different types of hair is enormous, ranging from tight wiry curls to ruler-straight. The color and shape of hair vary too. What accounts for these differences?

The type of hair you have is inherited from your parents. We may look back further, and say that it is determined by the part of the world in which your ancestors originated. It all depends on the race, or mixture of races, from which they came. In the very earliest days of human evolution, three basic racial groups of people seem to have existed on this planet. These spread out across the world and became mixed together. They are especially well mixed in countries where there has been massive immigration, such as the U.S.A. over the last few hundred years.

Scientists have identified three basic types of hair in today's human population, and have related them to these three early races: Asian, Caucasoid and African.

The three types of hair not only look quite different, but the differences in their responses to physical and chemical damage can be remarkable.

Asian

These are people from the Orient, for example from China and Japan. Their hair is very straight, and always black in color.

Caucasoid

The Caucasoid group is the most 'mongrel' of the three racial groups. Modern Caucasoids are very varied, even though they are descended from the same group

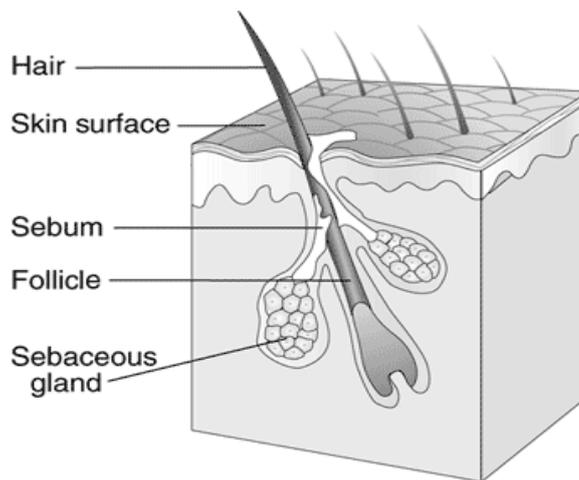
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of ancestors. They range from the fair-skinned people of north-west Europe to the widely varying peoples of the Indian subcontinent. Their hair may be either wavy or straight, and the diameter varies widely too. The color ranges from black to a pale blond that is almost white, including just about every possible shade in between.

African

African people originated in Africa. Their hair is black and tightly curled. It tends to be woolly and dry, and is extremely easily damaged by heat or chemicals.

1.3 HAIR STRUCTURE

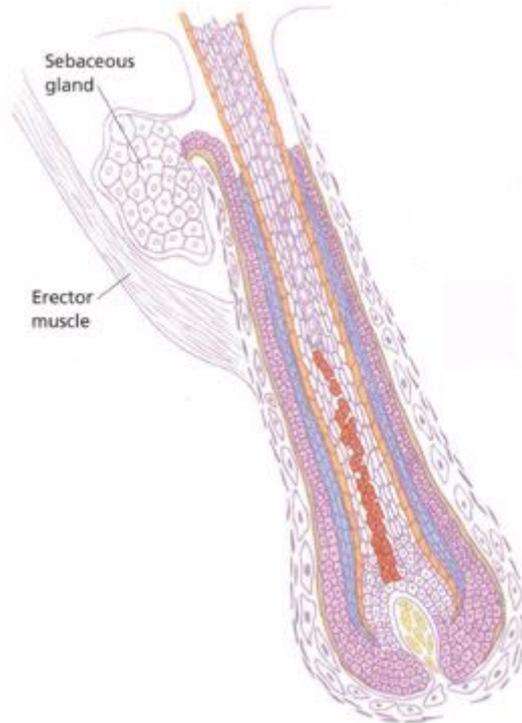


The hair is a specialised outgrowth of part of the skin called of epidermis. There are two distinct parts of hair, the **HAIR FOLLICLE** and **HAIR SHAFT**.

1.4 HAIR FOLLICLE

Is a tiny cup-shaped pit buried deep in the fat of the scalp. The follicle is the point from the which the hair grows.

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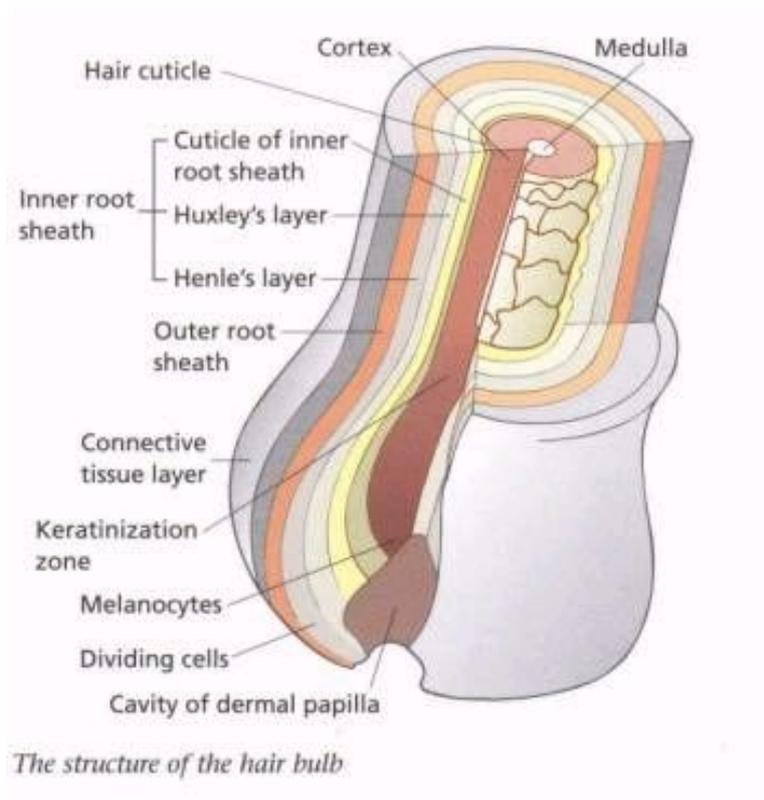


The follicle can be divided into two regions:

- the hair bulb
- the mid-follicle region

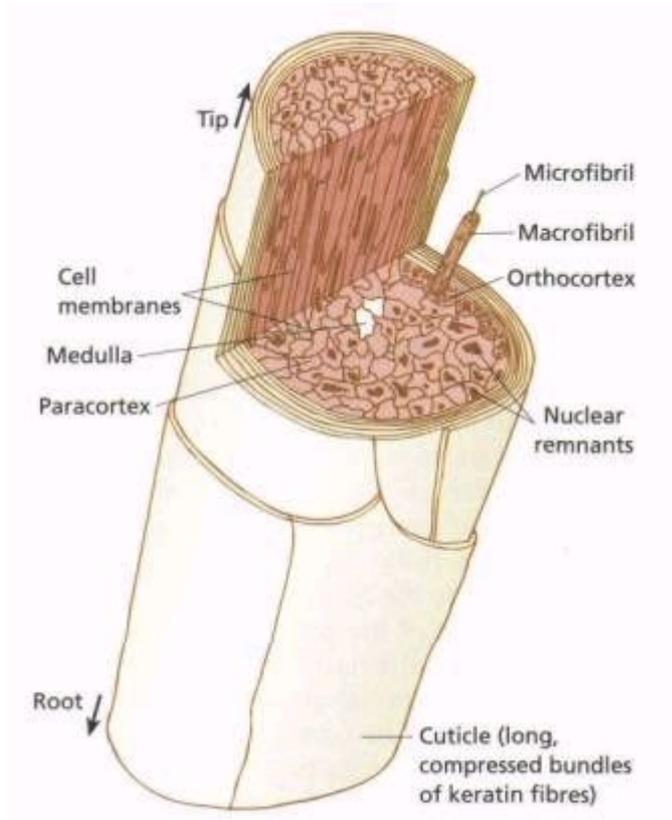
The hair bulb lies inside the hair follicle; it is a structure of actively growing cells, which eventually produce the long fine cylinder of a hair. Special cells in the hair bulb produce the pigment that colors the hair. The pigment is called melanin, and these cells are known as melanocytes.

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The mid-follicle region in the part of the follicle the actively growing cells die and harden into what we call a hair.

As the cells below continue to divide and push upwards, the hair grows upwards too, out of the skin. It now consists of a mixture of different forms of the special hair protein called **keratin**.



THE HAIR SHAFT

This is the part of the hair that can be seen above the scalp. It consists mainly of dead cells that have turned into keratins and binding material, together with small amounts of water.

Terminal hairs on the head are lubricated by a natural oil (sebum) produced by the sebaceous glands of the follicles.

How much natural oil your glands produce is mostly determined by your genetic inheritance.

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STRUCTURE OF THE HAIR SHAFT

Your smooth, glossy hairs have a more complicated structure than you might think. Each one can be compared to a tree: all its moisture lies in its centre, behind a tough outer layer of protective bark. If the bark of the hair is well looked after the whole hair remains in good condition, If the bark is stripped off to expose the centre the hair may break.

The centre part of the hair is called cortex, this is the primary structural part of the hair shaft that has the protein chains. These long, high weight chains give hair its strength and elasticity. The cortex absorbs water easily. That is why highly bleached hair is porous. It has lost the cuticle layers, exposing the water-loving cortex. The pigment in the cortex determines the hair's natural color.

The other outer layer of the hair (the "bark") is **called the cuticle**, and it is made up of between six and ten overlapping layers of long cells. This is the shingle-like protective covering on the hair shaft that is water-repellant. To understand this, place a strand of hair in a glass of water. If the cuticle is intact, the hair floats; if not it will sink.

The other is **called medulla**, this is the hollow core of the hair shaft. The medulla is like a small hollow tunnel in the center of the hair shaft. It is not necessarily continuous but may occur in a random manner.

1.5 PHYSICAL PROPERTIES OF THE HAIR

The hair can change or be changed, it can be stretched, bent and curled. It can absorb moisture or lose it, its behaviour can change when it is wetted or when it is brushed.

We look at the special properties of hair, such as elasticity, porosity, texture and shine.

Elasticity

It is one of the most important properties of the hair, because of its elasticity, the hair can resist forces that could change:

- its shape;
- its volume;
- its length

The elasticity lets it spring back to its original form without damage.

When the healthy hair is wetted and stretched, it can increase in length by up to 30% and still return to its original length when it is dried.

Stretching it more than this will tend to damage it, however, leading to permanent lengthening and even breaking.

The elasticity of the hair depends on the long keratin fibres in the cortex.

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Chemical treatments of hair (such as perming, bleaching and dying) can change the cortex after repeated damage, and consequently change the hair's elasticity. Elasticity is affected too by other things such excessive heat, sun and other. Hair with poor elasticity will stretch only to a limited extend. It will not curl, it will break easily when it is groomed and it cannot be permed satisfactorily.

Static electricity

When dry hair is rubbed, as it is whenever it is never lie smoothly against each other. The results are "fly away" hair, which stands out from the head and looks unmanageable.

Moisture content

The moisture content of the hair is greater when the atmosphere is moist and humid, and less when the air is dry. The reason why hair collapses in hot, humid atmospheres is summed up by:

heat and humidity : - more moisture
 - less static electricity
 - collapse

In dry conditions:

Heat and dryness: - less moisture
 - more static electricity
 - more volume

When the hair is wet the cortex swells and the edges of the cuticle scales tend to lift. The hair surface temporarily loses its smoothness. There is therefore more friction when the wet hair is rubbed than when when it is dry.

Porosity

In a normal, undamaged hair shaft, very little water can get either into or out of the cortex, because the cuticle covering the cortex is intact, and is then almost waterproof.

When the hair is permed or tinted, however, the chemicals have to penetrate the cortex in order to react with the keratin inside it, damaging the hair.

Texture

Much of the attraction of a beautiful head of hair lies in its texture or feel. The texture depends on several and different things, and refers to the diameter or thickness of na

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individual hair strand (coarse hair is thicker than fine hair). Texture has no bearing on wave patterns.

1.6 DAMAGE HAIR

Damage to the hair is usually caused by heat (irons, blow drying, curlers, heat lamps, etc.), U.V. rays (Sun, lights, tanning beds), mechanical devices (combs, brushes, curling irons, etc.), chemicals (color, perms, relaxers, pool chemicals, the air, etc), or poor diet (specifically -lack of proteins and essential fatty acids).

2. BERACARE ARS HAIR SYSTEM: CONCEPT

BERACARE ARS HAIR SYSTEM helps to preserve young, beautiful and healthy skin. It is a natural product against free radicals, it is an original active that was born from the association of the three technologies:

- **Flavonoids (anthocyanins) obtained from Euterpe oleracea fruit oil**
Powerful natural antioxidant that provides some protection against environmental damage to the skin and are effective in slowing down skin inflammation.
- **Gamma-oryzanol obtained from Rice bran oil**
Natural antioxidant that promotes protection against free radical reducing the dryness in the skin.
- **Ômega-6 obtained from Passiflora edulis seed oil**
The use of ômega-6 in the skin imparts additional benefits in terms of enhancement of cell membrane structure and function, barrier maintenance and recovery, anti-inflammatory effects, protecting and maintaining the moisturizing activity.

With the synergism of these technologies **BERACARE ARS HAIR SYSTEM** is able to restore the lipidic film of the skin, reinforcing the structure of the cutaneous barrier, making the skin more resistant against outside aggression.

3. IN VIVO EFFECTIVENESS OF BERACARE ARS HAIR SYSTEM

The effectiveness of **BERACARE ARS HAIR SYSTEM** was evaluated in 20 volunteers (both answered a questionnaire).

Study principle

- evaluation of moisturization and revitalization activity

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- assessment of the effectiveness and the tolerance of the active ingredient and formulation too, by volunteers

Formulation studied

BERACARE ARS HAIR SYSTEM has been tested at level of 2% in a cosmetic formulation (basic formulation).

The formulation it was tested with ingredients non comedogenic and neutrals.

Formulation studied

Formulation: REVITALIZING SHAMPOO
Code: CAP03903B05

INGREDIENTS	INCI name	% w/w	SUPPLIER
PHASE A			
Desmineralized water	<i>Water</i>	57,75	-
DISSODIUM EDTA	<i>Dissodium EDTA</i>	0,10	DOW CHEMICALS
STILB TOUCH HDE	<i>Linoleamidopropyl PG-Dimonium Chloride Phosphate Dimethicone (and) Polyquaternium-10 (and) Quillaja Saponaria Molina</i>	2,00	BERACA INGREDIENTS
IMIDAZOLIDYNIL UREA	<i>Imidazolidynil urea</i>	0,15	ISP
PHASE B			
LAURETH SULFATE (28%)	<i>Laureth sulfate</i>	25,00	CLARIANT
PEROLIZANT AGENT	<i>Perolizant agent</i>	3,00	CLARIANT
PHASE C			
BERACARE ARS HAIR SYSTEM	<i>Passiflora edulis seed oil (and) Oriza sativa rice bran oil (and) Euterpe oleracea fruit oil</i>	2,00	BERACA INGREDIENTS
COCAMIDE DEA	<i>Cocamide DEA</i>	3,00	CLARIANT
BECHIDROIL RF3150	<i>Carapa guaianensis seed oil (and) PPG-2 Hydroxyethyl cocamide</i>	2,00	BERACA INGREDIENTS
FRAGRANCE	<i>Fragrance</i>	0,50	-

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Procedure:

- ✓ Add the ingredients of phase B into phase A, previously prepared.
- ✓ Mix until total homogenization.
- ✓ Add phase C, previously prepared, into phase A+B and homogenize.

pH = 5,5 / 6,5

3.1 EVALUATION OF THE SHINE

Study protocol I

It was evaluated the shine of the hair after chemical treatment and application of the product with **BERACARE ARS HAIR SYSTEM** X placebo.

Results:



Application of placebo

Application of shampoo
with 2% of **BERACARE ARS
HAIR SYSTEM**

The hair dyed and after treated with **BERACARE ARS HAIR SYSTEM** promoted great intensity of shine, because of the high refractive index.

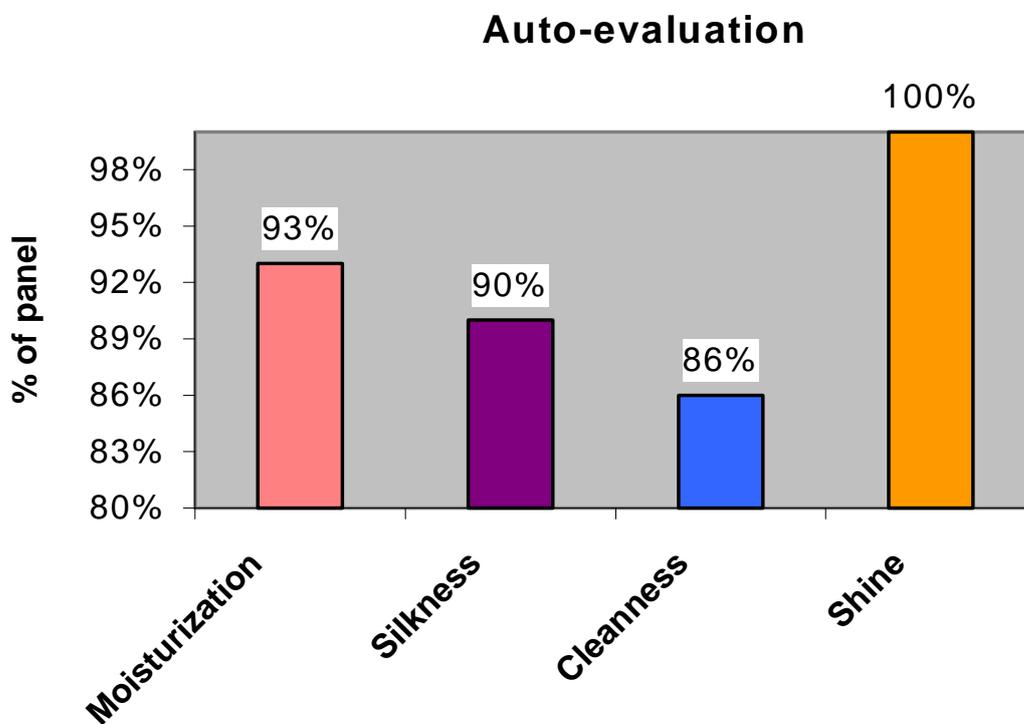
3.3 EVALUTION OF THE COSMETIC EFFECTIVENESS

Study protocol IV

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Evaluate cosmetic and tolerance effectiveness of the active applied in a cosmetic formulation in the same volunteers;
It was evaluated cleanness effect, moisturizing effect, shine, silkness and revitalization.

This assessment (expressed as a % of the panel) is recorded on the following graphic:



The application of the formula studied was therefore judged to be very pleasant and effective according to the majority of volunteers.

6. TOXICOLOGICAL DATA: Dermatological evaluation topical compatibility

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6.1 PATCH TEST: SKIN TOLERANCE

Objective:

To prove the absence of primary irritation accumulated irritation and accumulated sensitization potential of the formulation for topical use of the **BERACARE ARS HAIR SYSTEM**.

6.2. CONCLUSIONS

The products cited before was evaluated under the following compatibility cutaneous clinical study:

- ✓ Primary skin irritation
- ✓ Cumulative skin irritation
- ✓ Skin sensitization

Under the conditions that **BERACARE ARS HAIR SYSTEM** was evaluated and in the sample of volunteers studied, the data allows us to concluded that:

There were no **irritation potential observed**

There were no **sensitization potential observed**

7. TOXICOLOGICAL DATA: Dermatological evaluation of potential photo-irritant and photosensitization topic

7.1 PATCH TEST: Photoirritation and photosensitization

Objective:

To prove the absence of **photo-irritation potential** and **photosensitization potential** of the formulation for topical use of the **BERACARE ARS HAIR SYSTEM**.

7.2 CONCLUSIONS

BERACARE ARS HAIR SYSTEM was evaluated under the following compatibility cutaneous clinical study protocols:

- ✓ Photo-irritation primary and cumulative
- ✓ Photosensitization

Under the conditions that all the products from **BERACARE ARS HAIR SYSTEM** was evaluated and in the sample of volunteers studied, the data allows us to concluded that:

There were no **photo-irritation potential observed**

There were no **photosensitization (photoallergy) potential observed**

8. COSMETIC INTEREST

8.1 APPLICATIONS

According to the evaluations **BERACARE ARS HAIR SYSTEM** is a natural active that can be applied in cosmetic formulations with special concentration, from 2% mainly in products for the treatment of damage and dry hair

According to toxicological data **BERACARE ARS HAIR SYSTEM** is:

- ✓ non-comedogenic (can be applied in hypoallergenic products).

Is a product easy to manipulate and can be applied in formulations like:

- Shampoo;
- Creams;
- Masks;
- Tonics;
- Balms .

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9. GENERAL CONCLUSION

BERACARE ARS SYSTEM SYSTEM is:

100% natural

Isn't irritating and sensitizant to skin (non-comedogenic)

Improves shine, cleanness, moiturization na and silkness

It is easy to manipulate, due to solubility in many cosmetic ingredients is possible
apply in: creams, shampoos, masks, balms, tonics

10. TECHNICAL SPECIFICATIONS

ANALYSIS	UNITS	SPECIFICATION
Appearance	Visual	Liquid
Color	Visual	Yellow to greenish
Color Lovibond	% (R/Y/B/N)	< 3,0R / < 35,0Y / < 1,0B / < 1,0N
Color Gardner	%	< 20,0
Specific gravity (20°C)	g/cm ³	0,885 – 0,930
Refractive index (20 °C)	-	1,465 – 1,485
Acidity value	% oleic acid	< 5,0
Total microbiologic count	cfu/g	<100

SOLUBILITY	
Propylene glycol	Insoluble
Alcohol	Insoluble
Glycerin	Insoluble
Vegetable oil	Soluble
Mineral oil	Soluble
PPG-15 Stearyl ether	Soluble
PPG-2 Hydroxyethyl cocamide	Soluble
PPG-2 Hydroxyethyl stearamide	Soluble
Octyl palmitate	Soluble
Caprylic / Capric Triglyceride	Soluble
Isopropyl palmitate	Soluble
Bechidroils	Soluble

11. STORAGE INFORMATION

BERACARE ARS HAIR SYSTEM is stable until 18 months when stored in cool, dry, and well ventilated surroundings.

Light protected, not above room temperature, in original and tightly sealed containers (nitrogen blanketed).

12. REGULATORY INFORMATION

- ✓ INCI name CTFA / CAS number
- ✓ INCI name EU Labeling / CAS number

INCI name (CTFA)	CAS no.
<i>Passiflora edulis seed oil</i>	97676-26-1
<i>Oriza sativa rice bran oil</i>	84696-37-7
<i>Euterpe oleracea fruit oil</i>	861902-11-6

INCI name (LABELING)	CAS no.
<i>Passiflora edulis</i>	97676-26-1
<i>Oriza sativa bran</i>	84696-37-7
<i>Euterpe oleracea</i>	861902-11-6

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