

# SÉRUM 3R

## TREATMENT STAGE

### Product Description:

**Sérum 3R:** A serum to fight the imbalances of mature skins (skin atrophy, loss of tone, wrinkles, slowing of cell renewing, deterioration in cutaneous and overall immune function). Sérum 3R is a renewing, regenerating and repairing serum. Its complex antioxidant formula is rich in exfoliating, firming, soothing and hydrating active ingredients.

**Skin Instants:** Devitalized and/or mature Skin Instants®.

### **Available sizes and description of packs:**

Retail Product: 8 ml bottle and 30 ml pump bottle

Professional Product: 125 ml bottle

## 1 / The Biologique Recherche Findings

### Diagnosis:

Mature skin reflects all the natural changes linked to the skin-aging process which begins in our mid-20s. This is reflected in dry skin, more pronounced wrinkles, loss of firmness and tone, heightened sensitivity including redness and uneven thickness: very thick in areas that have had long exposure to sun and very thin in others.

Of all the aspects of aging, the most visible signs are those present on the skin, and facial skin in particular. Thinner and less resistant than body skin, it is also more exposed to external aggressions such as sunlight.

### Causes:

Although the quality of our skin is partly rooted in our genetic heritage, many factors influence skin aging. We can draw a distinction between natural (physiological) aging, and aging induced by external factors:

#### **1. Innate aging**

- Genetic factors: every person's DNA reacts differently to cell aging. Some people are less well disposed than others, not everyone is equal in terms of speed and effectiveness of cell renewing; external signs in some are more visible, and sooner.
- Hormonal deficiencies: the shutdown of estrogen production induces a diminution of collagen and elastin fibers. The fundamental substance bathing the skin cells changes, altering cell cohesion; the skin sags and loses its suppleness.
- Oxidative stress: free radicals are unstable molecules from the metabolic processes in our body. A young body, full of powerful anti-radicals, is able to trap them and transform them into degradable substances. However, the effectiveness of free radical captors diminishes over time, and when the free radicals are back in excessive quantities in the body, they attack cell membranes and DNA. They are thus responsible for premature tissue aging causing collagen to degrade and wrinkles to become more pronounced.

## 2. Induced aging

- Environment: although cold, dryness, wind and pollution alter the skin, sun remains the principal factor responsible for skin aging. Areas of the body that are constantly exposed to the sun, and therefore the face in particular, are more marked by signs of aging.
- Nutrition: vitamin deficiency (A, E and C) and a shortage of trace elements (copper, zinc, selenium, etc.) can accelerate skin aging by reducing cell resistance to extrinsic factors and by slowing cell renewal.
- Expression: repetitive contraction of the facial muscles, caused by grimacing and emotional expressions deepens wrinkles around the eyes, mouth, and forehead.
- Tobacco: the vasoconstricting effect of nicotine causes a reduction in cell oxygenation, thus slowing cell renewing. Tobacco also leads to an increase in enzymes that destroy collagen.

### Findings:

The skin aging appearance depends on a number of factors, but it is possible to define the signs of skin aging in terms of age range.

#### 1. First phase of skin aging: age 20-30

It is in the mid-20s than the skin aging process starts. Indeed, cells synthesize fewer important molecules and collagen production slows down, which leads to a gradual loss of skin tension. This is why, in the late 20s, fine wrinkles already appear around the eyes and mouth (and especially among smokers).

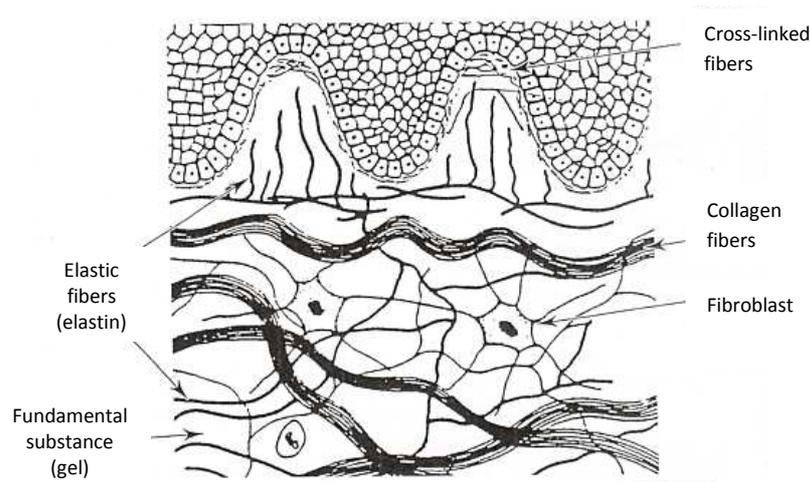
From the 30s, the skin begins to show signs of cutaneous aging. But the dermis also begins to lose its collagen, and the quantity of elastic fibers in the upper part of the dermis diminishes.

#### ➤ **FOCUS: Loss of tone and firmness**

The dermis, which actually gives the skin its structural strength, is made up of proteins with a fibrous intertwined structure: collagen and elastin:

- Collagen fibers give tissues cohesion and resistance.
- Elastin fibers add, as for them, elasticity, mechanical resistance and body strength...

These fibers structure the skin's architecture and give volume and firmness to the sub-cutaneous tissues responsible for its density, elasticity and suppleness.



Getting older, the cohesion between dermal cells and epidermal cells weakens. Deep changes in the intracellular environment then set in, altering tissue cohesion and inter-cell exchanges.

Dermal fibroblasts, which produce both collagen and elastin, gradually become fewer (**by half between ages 20 and 80**) causing tissues to slacken and their synthesizing power to decline. This slackening is also aggravated by decreased muscle tone.

Collagen I fibers (which participate in forming connective tissue) and III (which play an important role in the cardiovascular system), predominant in the dermis, are the most affected by aging. On the one hand, cytokines (messenger molecules sent by epidermal cells to the dermis, which serve to boost collagen production) become less efficient. On the other hand, the collagen fibers rigidify and are destroyed by collagenase: they no longer perform their maintenance role.

The synthesis of GAGs (glycoaminoglycans) is reduced, thereby impairing water retention in the dermis and thus the firmness and tone of the skin.

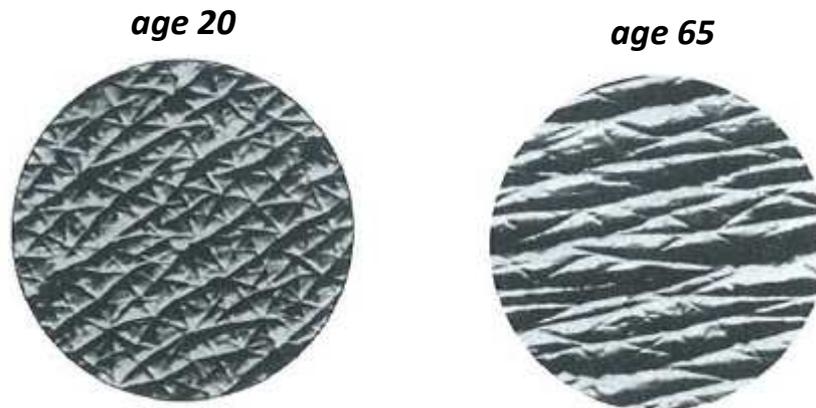
With age, two populations of cells that make up the epidermis are also affected:

- **Keratinocytes:** their renewal is slowed. The cohesion of superficial horny cells weakens as the quantity of inter-cell lipids reduces with age, especially in women. Their lamellar structure is consequently modified. Corneocytes, instead of eliminating themselves, aggregate into small packets.
- The **melanocyte system:** the number of epidermal melanocytes declines by 10% every 10 years after age 30, in covered areas as well as those exposed to light.

The result is a thinning of the epidermis, the skin appears rough, and natural protection against UV rays and immune surveillance of the skin are reduced.

The dermal-epidermal junction is also altered: it flattens out and changes shape. This phenomenon is due to alterations in the elastic vertical network of oxytalan fibers (which contain collagen and lipoproteins) of the papillary dermis: they lose contact with the basal lamina and disappear later. The flattening of the dermal-epidermal junction entails an alteration of skin's micro-circulation, degrading the fibroblasts, and skin appearance is paler.

The meshes of the skin's reliefs widen, the dermis and epidermis no longer adhere as well, and exchanges between them become fewer and fewer.



*Alteration of the relief of the skin, in getting older*

## 2. Second phase of aging: age 30-40

Although these transformations are still superficial until the age of 30, expression wrinkles (frown lines or horizontal lines if the forehead is continually contracted, and superficial lines at the corners of the eyes) begin to manifest around age 30-40: 50% of women between the ages of 30 and 40 have inter-eyebrow wrinkles, 38% have wrinkles around the eyes, and 33% have nasolabial fold wrinkles.

We also find color irregularities with the appearance of spots and redness, due to the gradual alteration in the skin cells, the purpose of which is to ensure immune surveillance of the skin.

### ➤ **FOCUS: Overall deteriorated skin immune function**

The skin naturally supports its own micro-ecosystem made up of mites, micro-yeasts and a multitude of bacteria, better known as skin flora. These micro-organisms play a control role in the balances in healthy skin.

The presence of antibacterial substances in sebaceous secretions plays an essential role in the natural protection of the epidermis against infections. The production - from the triglycerides in sebum - of free fatty acids (oleic acid, palmitic acid or stearic acid) by the bacteria of the skin flora ensures an effective defense. In fact, certain fatty acids have an antibacterial effect on staphylococcus aureus and streptococcus, which are the bacteria mainly responsible for sub-cutaneous inflammation.

Numerous factors modify normal skin flora:

- The region of the body: bacteria is more dense in sebaceous areas and folds than on dry skin.
- The use of certain treatments (antibiotics, estrogen progestins) disturbs skin flora and promotes the growth of germs.
- Climate, lifestyle, soaps...

Intraepidermal macrophages, or Langerhans cells, contribute to the body's immune reactions against microorganisms that invade the skin. However, with age they become fewer in number, particularly in areas that have been exposed to the sun because, like melanocytes, they are highly sensitive to UV.

Consequently, with age, the skin flora weakens. Deficient, it is no longer able to defend the body against the many harmful genes. The skin is sensitized, marked by red patches or other skin infections, lesions, and no longer performs its role as an immune barrier.

### 3. Third phase of aging: age 40-50

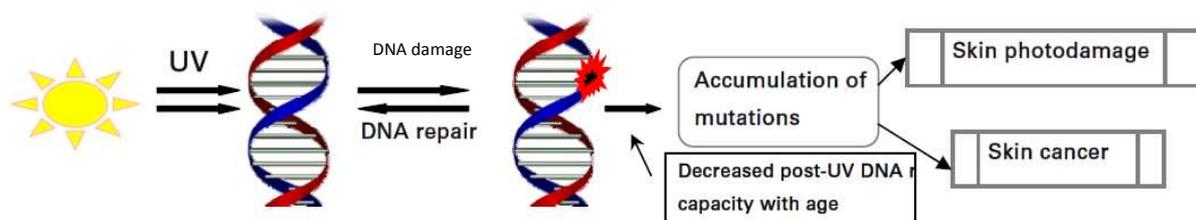
However, it is from age 40 that the signs of time are accentuated: abuses are not left unnoticed, wrinkles and spots appear more and more. And it is due to slower cell renewal, which leads to the skin sagging, that wrinkles set in.

#### ➤ **FOCUS: Slowing of cell renewal, oxidation by free radicals**

Photoaging induces biochemical dysfunctions: protein-destroying enzymes are activated, the extracellular matrix renews itself abnormally, leading to an intensive degradation of collagen and the elastic fibers of the skin.

UVA and UVB rays are two of the main factors responsible for skin aging:

- UVA rays (wavelengths between 320 and 400 nm) account for 95% of UV radiation. They penetrate the epidermis and damage the dermis. They generate the production of oxygenated reactants that cause the DNA double helix and cross-links between DNA and proteins to rupture. They also cause a reorganization of the dermal matrix and thus accelerate skin aging by accentuating degradation and reducing the collagen's branching capacity.
- UVB rays (wavelengths between 290 and 320 nm) represent barely 5% of UV radiation. Principally absorbed into the epidermis, they are responsible most for sunburn and skin cancers. More cytotoxic and mutagenic than UVA, they interact directly with DNA, causing serious damage.



*DNA damage by prolonged exposure to UV*

The body is naturally capable of repairing damaged DNA thanks to two complex systems: Nucleotide Excision Repair (NER) and Base Excision Repair (BER). These two systems can repair breaks in the double helix as well as DNA mismatch problems. However, with age these systems become less effective.

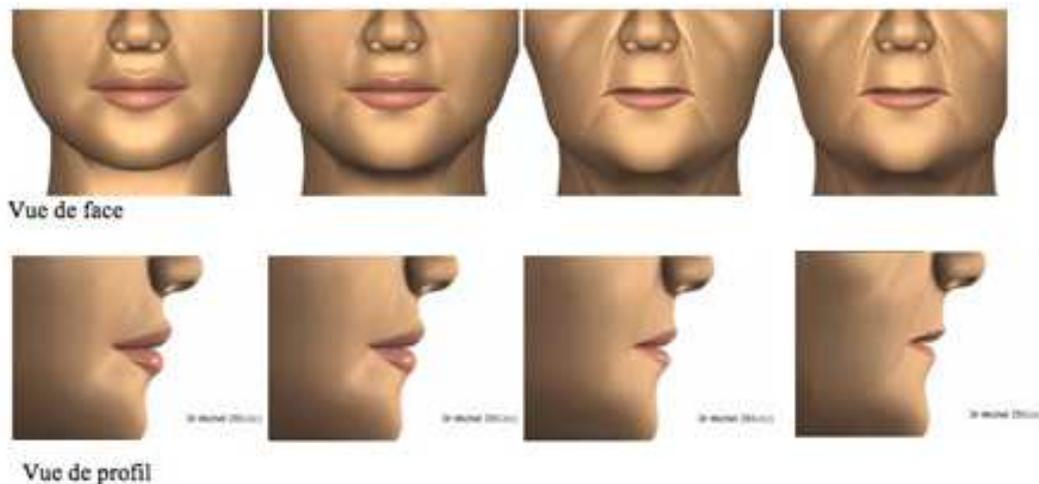
As well as UV rays, tobacco, pollution and the natural aging process also encourage the production of free radicals and oxygenated reactants. These organisms are responsible for oxidative stress, which degrades cellular macromolecules: nucleic acids, proteins and lipids. Proteins are the main targets of oxidation: by modifying the

amino acids that make them up, oxygenated reactants cause functional and structural changes in enzymatic proteins, generating major reorganization and malfunctions.

Other types of reactants, called Reactive Carbonyl Species (RCS), act as mediators of carbonyl stress underlying endogenic chemical processes, such as lipidic peroxidation (oxidation of unsaturated lipids by radical species) and glycation. Glycation, a chemical process that bonds sugars to collagen fibers, is one of the main causes of collagen destruction (rigidification, agglomeration, hardening, loss of suppleness and finally breakup).

4-HNE (Trans-4-hydroxy-2-nonenal) is one of the most abundant and cytotoxic RCSs. With its double links and its carbonyl grouping, it reacts not only with DNA but also with proteins. By inhibiting their synthesis, by reducing communication pathways, by deactivating the enzymes essential for cell renewal, and by acting on DNA repair mechanisms, intracellular RCSs play a major role in mutageneses and carcinogeneses due to oxidative stress. Also, 4-HNE can inhibit NER thereby reducing cell renewal over the course of time.

Furthermore, in the mid-40s, the destruction of collagen fibers intensifies. This causes the face to lose even more of its volume around the cheeks: features are less defined, the temples are hollower, the eyebrows and cheekbones collapse. This process also generates a significant loss of skin density.



*Change in face volume over time*

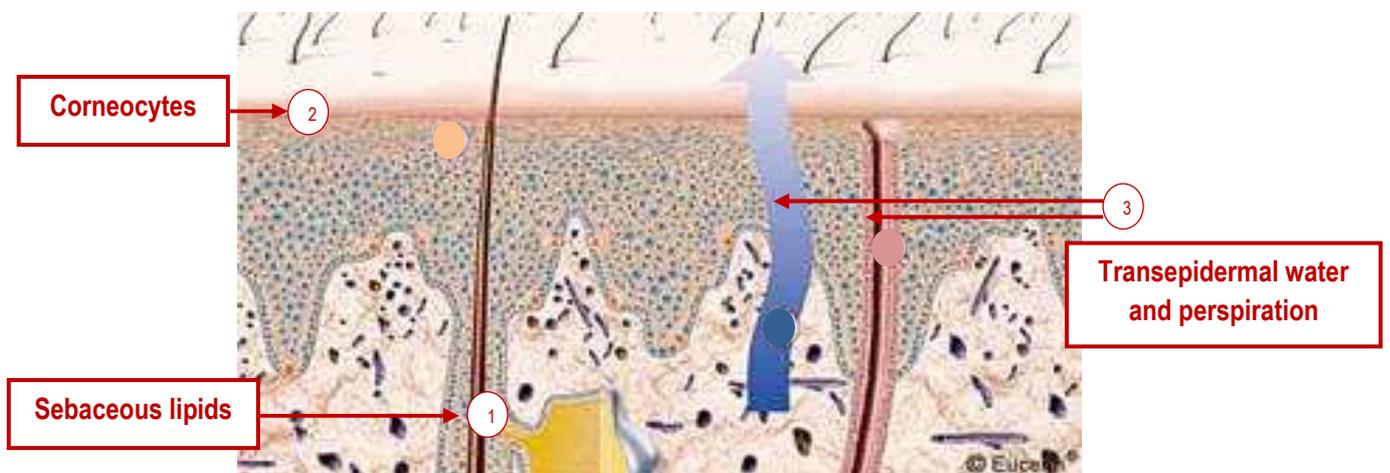
In addition, the skin dries out, becomes rougher; there is noticeable deficiency of the hydrolipidic film, along with tingling sensations and other discomforts.

➤ **FOCUS: Skin atrophy: lack of hydration, lipid shortage**

Dryness of the skin, or xerosis, manifests as harshness, roughness, scaliness and fissuring of the skin, accompanied by a tingling sensation notably in "mature" skin. This dehydration also causes a loss of skin elasticity, leading to visually apparent marks.

Getting older, the water content of the horny layer declines about from 13 to 7 %, and the sebaceous glands become less active. Women's skin tends to gradually dry out after the menopause.

At the cell level, this corresponds to dehydration of the stratum corneum, which is partly due to a deficient lipid barrier. The hydrolipidic film is made up of fatty substances, which come essentially from keratinocytes and sebum, and of water, which comes from sweat and the moisture in the atmosphere. Dehydrated skin thus results from the skin's inability to maintain optimal hydration. This is due to the combined effect of several phenomena:



**1 - The epidermal lipids** no longer retain water as the intercellular lipidic cement is less able to play its "water captor" role, and hydrolipidic film lipids which are now present in insufficient quantities can no longer regulate the skin's water content.

**2 - The corneocytes** no longer bind water, because NMF is lacking or is no longer capable of performing its functions. NMF (Natural Moisturizing Factor) is a set of substances that act to bind water in the corneocytes by means of chemical bonds with water molecules. Naturally present in the upper layers of the epidermis, it makes up nearly a third of the horny layer. Hydration is thus maintained by the epidermis and essentially by the horny layer because water continually diffuses from the dermis to the surface of the skin.

**3 - TEWL (Transepidermal Water Loss)** increases because it is no longer regulated: the water evaporates too fast

**4. Last aging phase: from age 50**

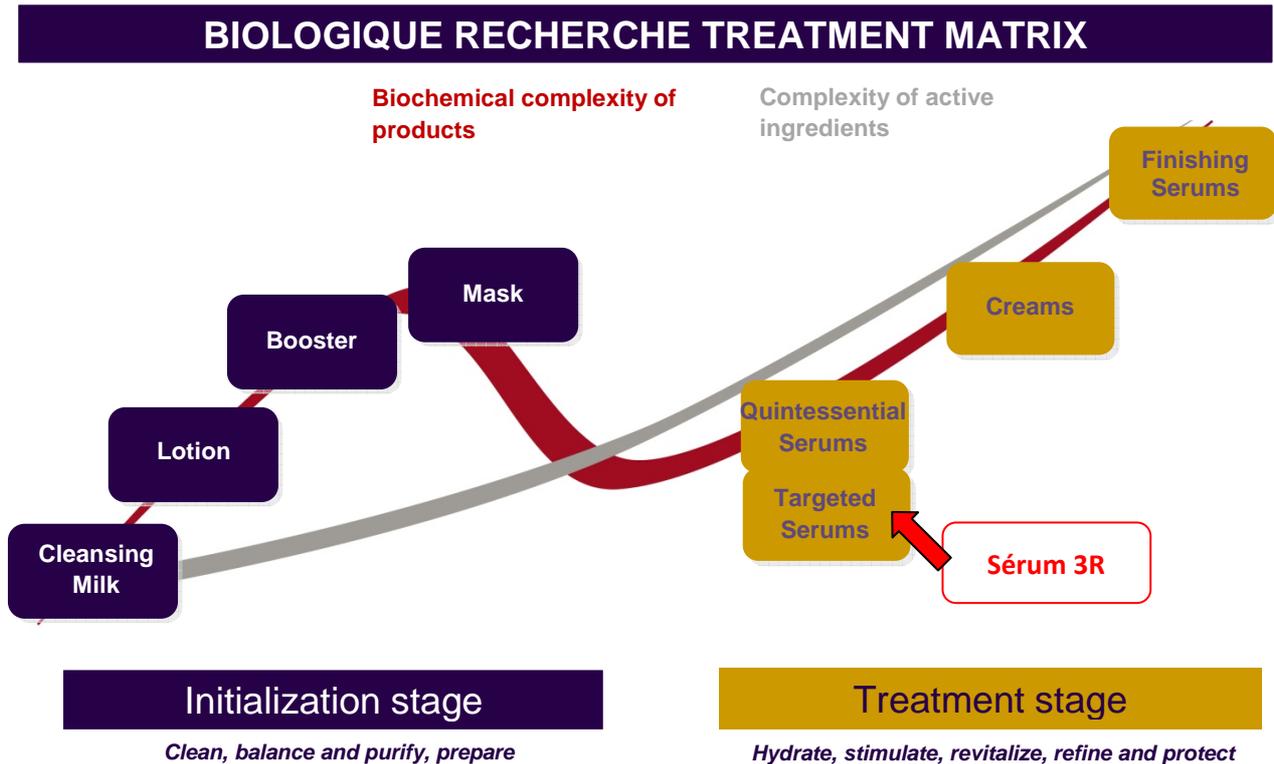
It is only from age 50 that the previous signs worsen: wrinkles set in and remain visible, even when the face is immobile. Sagging of the skin becomes more visible due to major loss of volume and firmness.

It is also at this age that dermatitis may appear more frequently and thus precancerous lesions (keratosis).

## 2 / The Biologique Recherche Solution

**Sérum 3R** is a combination of 12 powerful active ingredients targeting the causes and consequences of skin aging. Its exfoliating action allows better cell regeneration, its antioxidant active ingredients fight free radicals while its firming active ingredients act to retighten facial skin. Lastly, anti-inflammatory active ingredients aim to repair the immune function which deteriorates with time, and its active ingredients rich in hydrating agents (and encouraging the natural synthesis of lipids) rebuild the hydrolipidic barrier which begins to become deficient from the 40s.

This complete serum acts at all ages, to prevent or fight the signs of aging.



## 3 / Benefits

- Exfoliates the epidermis to get rid of dead cells.
- Stimulates the body's antioxidant defenses to fight free radicals.
- Firms the epidermis by helping to strengthen the skin structure.
- Calms irritations and inflammations thanks to the action of anti-inflammatory agents.
- Contributes to improving the hydrolipidic film
- Repairs DNA.
- Hydrates the upper layers of the epidermis.

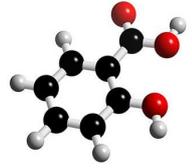
## 4/ The main active ingredients of the formula

**MAIN ACTIVE INGREDIENTS:** Sodium Salicylate, Lactobionic Acid, White Willow Bark Extract, Cranberry Extract, Antioxidant Tripeptide, Walnut Extract, Complex with an Elder flower, Chestnut Wood and Tropical Almond Leaf Extract, Nopal Oligosaccharides, Skin-protective sugar, Rhamnose-rich Polysaccharide, Opuntia Ficus-Indica Extract, Pichia Anomala Extract.

## 1. Exfoliating active ingredients

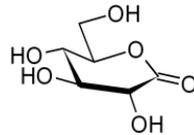
### **Sodium Salicylate:**

Sodium Salicylate is a Salicylic Acid salt, the main element of the Beta-Hydroxy-Acids group. This one is naturally synthesized by certain plants such as White Willow. Known for a long time for its medicinal properties (anti-inflammatory properties of aspirin), it also plays an important role in cosmetics: it is a keratolytic agent which has the special characteristic of being more lipophilic than the Alpha-Hydroxy-Acids. It can thus pass through sebum and penetrate more easily into the pores to dissolve the dead cells that obstruct it. Its exfoliating action helps to smooth facial skin and to stimulate the epidermal renewal process.



### **Lactobionic Acid:**

Lactobionic Acid is a Poly Hydroxy Acid (PHA). Less irritating than Alpha-Hydroxy-Acids (AHA), it is an exfoliant that gently eliminates dead cells on the surface of the skin.



### **White Willow Bark Extract:**

White Willow, which belongs to the Salicaceae family, is native of North America, Asia and Europe. It grows near rivers and wetlands. Known as a pain relief remedy for nearly 3 millennia, it is now used for its anti-inflammatory and analgesic properties. White Willow bark powder is a natural source of salicylic acid and confers the same properties as this component (exfoliation, antimicrobial action) without discomfort or irritation.



## 2. Antioxidant active ingredients

### **Cranberry Extract:**

This botanical active ingredient is particularly rich in vitamins A, C and E as well as in carotenoids and flavonoids (flavonols, anthocyanins, proanthocyanins). These families of molecules are particularly known for their antioxidant qualities and make this extract an ingredient of choice in cosmetic preparations for mature skin.



### **Antioxidant Tripeptide:**

This synthetic peptide has a dual purpose: it protects and repairs damaged DNA. By inhibiting the formation of carbonyl proteins, it acts as a photoprotector for dermal keratinocytes and fibroblasts. It protects skin cells against DNA degradation caused by UV rays and enhances the capacity of the DNA repair system. This antioxidant tripeptide is an active ingredient offering complete protection to minimize the effects of intrinsic and extrinsic aging.



### **Walnut Extract:**

Walnut Extract provides protection against the effects of time and environmental aggressions. This active ingredient reinforces the antioxidant functions naturally present in the body, stimulates keratinocyte growth, and limits the activity of elastase, an enzyme responsible for the degradation of elastin. Walnut Extract is used in cosmetology for its anti-wrinkle, protective and firming power. This active ingredient has been proof-tested *in vitro* for its ability to considerably reduce oxidative stress.



### 3. Firming / reconditioning active ingredients

#### **Complex with an Elder Flower, Chestnut Wood and Tropical Almond Leaf Extract:**

This patented and proof-tested active ingredient is a synergistic combination of three plant substances: Almond flowers, Elderberry flowers and Chestnut flowers: Rich in flavonoids, polyphenols and tannic acids, this extract which has been objectively confirmed *in vivo* reinforces the elasticity and tone of the skin. It reduces hyperlaxity of the skin, has a tissue structuring effect, and improves the skin's micro-circulation.



#### **Nopal Oligosaccharides:**

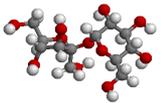
This active ingredient rich in purified oligosaccharides of Nopal (Barbary fig) encourages exfoliation of corneocytes by boosting the activity of the enzymes involved in the lysis of dermosomal proteins. The activity of the two enzymes that encourage desquamation (Stratum Corneum Chymotryptic Enzyme and SC Tryptic Enzyme) is augmented, enabling better cell renewal. Proof-tested by *in vivo* tests, this active ingredient improves the clearness and radiance of the skin and attenuates lines and wrinkles (in both number and extent).



### 4. Anti-inflammatory active ingredients

#### **Skin-protective sugar:**

This oligosaccharide, obtained by enzymatic synthesis from natural sugars (saccharose and maltose), has a protective and biostimulating action on the skin's natural defenses. Ecocert-certified, this substrate is bioselective for beneficial microbial flora, to the detriment of undesirable and pathogenic flora.



#### **Rhamnose-rich polysaccharide:**

This Polysaccharide has a saccharine structure that is particularly rich in rhamnose. This is a protective acid: it alleviates skin inflammation by binding specifically to keratinocyte membrane receptors. It consequently limits the propagation of inflammatory reaction due to skin aggression by various factors such as pollution, bacteria, chemical agents, etc. Its soothing properties make it an ingredient of choice for fragile and sensitive skin.



### 5. Hydrolipidic film reconditioning active ingredients

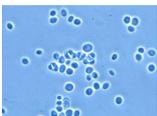
#### **Opuntia Ficus-Indica Extract:**

Rich in polysaccharides, vitamins, minerals and flavonoids on the one hand, and piscidic acid on the other, Barbary Fig Extract fights epidermal desiccation while preventing premature skin aging. This active ingredient is widely used for its simultaneously hydrating, antioxidant and firming properties. It has long been a weapon of choice by Berber women against the burning wind of the desert.



#### **Pichia Anomala Extract:**

This pure fraction of mannan from Pichia Anomala (a yeast) participates in driving the skin's natural lipid-replenishment system thanks to its boosting effect in the key steps of synthesis, transport, secretion and maturation of epidermal lipids. This proof-tested active ingredient also considerably reduces Insensible Water Loss.



## **5 / Directions**

### *5.1 Cabine usage*

**Sérum 3R** will be selected for pre-mature and mature Skin Instants<sup>®</sup>, as soon as wrinkles can be observed, or for devitalized Skin Instants<sup>®</sup>. It should be used before the cream to exfoliate the epidermis and improve the penetration of active ingredients, combined or not with Quintessential Serums according to the Skin Instant<sup>®</sup>, to the entire face or topically.

### *5.2 Home usage*

*Apply to the entire face, neck and cleavage.*

Apply a few drops of **Sérum 3R** after using the recommended milk and lotion and before applying your day or night cream.

**Cautions:** Avoid the immediate exposure to the sun after using the product. Not suitable for children. External use only. Avoid contact with eyes and eye contour.

## **6 / Major selling points**

- A serum over-boosted in proof-tested active ingredients for pre-mature and mature Skin Instants<sup>®</sup>.
- A complete response for mature skin, from exfoliation to firming.
- Radiantly soft, the skin regains youth and freshness.
- A rebalancing and firming treatment for devitalized skins.
- An essential ally for fighting the effects of time.
- The skin is visibly more beautiful: the grain of the skin is refined, the complexion is uniform and radiant.
- The skin is less sensitive, protected against time which goes by.
- Toned, firmed, hydrated and smooth epidermis.
- A combined preventive (antioxidant action) and repairing (regenerating action) treatment.
- 3R = **Renewing + Regenerating + Repairing.**

---

### **INCI List**

Water (Aqua), Sodium Lactate, Gluconolactone, Salix Alba Bark Extract, Glycerin, Propylene Glycol, Hydrolyzed Opuntia Ficus Indica Flower Extract, Biosaccharide Gum-2, Pichia Anomala Extract, Alpha-Glucan Oligosaccharide, Juglans Regia (Walnut) Seed Extract, Opuntia Ficus-Indica Stem Extract, Vaccinium Oxycoccus Fruit Extract, Terminalia Catappa Leaf Extract, Sambucus Nigra Flower Extract, Diaminopropionoyl Tripeptide-33, Lactobionic Acid, Phenoxyethanol, Sodium Salicylate, Sodium Gluconate, PVP, Tannic Acid, Ethylhexylglycerin, Sodium Metabisulfite, Caprylyl Glycol, Potassium Sorbate.

**This formula contains no paraben.**