



esse

S K I N C A R E

The Science Behind Ageing

THE SCIENCE BEHIND AGEING

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The Science behind Ageing

Ageing is inevitable, the trick is to do it gracefully. When we refer to “anti-ageing” we would like to note that we are not anti-old people, we are just invested in helping people look better for longer.

Esse takes long-term skin health very seriously, and ageing is a long-term process. Our approach often has roots in evolutionary first principles, but we use modern science, employing advances in biotechnology to help us mimic the conditions we evolved for.

Humans evolved as hunter-gatherers, so we must consider the conditions provided by this lifestyle as the most natural for our bodies.

Studies on hunter-gatherer communities have consistently reported that they are happier and healthier than modern humans. There are elements of the hunter-gatherer lifestyle that we have lost in the modern world. It is well-established that many of the changes brought by modernisation have resulted in detrimental health outcomes. This is why we want to rewild the skin – returning it to the microbially rich and diverse state for which it evolved. Unfortunately, we can't return to this state in a hunter-gatherer context. There is simply not enough left of the natural environments our ancestors thrived in.

However, with recent advances in biotechnology, we can mimic these conditions, providing skin with exposure to beneficial microbes and building the diversity of our microbiomes.

We believe that there are many aspects and challenges of modern life that have resulted in accelerated ageing. We seek to bring a truly natural solution to this problem, bringing the wild back to clients, even those in the heart of city life. We use biotechnology to do this, offering skincare that is effective in the short-term as well as in the long-term.

Esse is driven by sustainability in all its facets, including sustainability for the client. We want people to be able to address the root causes of accelerated ageing, really improving the state of their skin to look their very best into old age. We don't sacrifice long-term skin health for short-term results.

Ageing Pathophysiology (the group of biological processes that lead to the signs of ageing) is heavily influenced by the other pillars of skin health. Elements of skin health that are tightly linked to Ageing Pathophysiology are:

- › Inflammation – This is known to increase the rate of ageing because of how it affects the biological processes that lead to the slow decline. A hyper-

inflammatory state increases the rate of ageing so significantly that there's even a word we use to talk about inflammation-induced ageing – inflammageing.

- › Barrier Function is a fundamental aspect of skin health. Acting as a selective barrier is the basis of skin's role in our bodies, so there are far-reaching consequences when that job is not being done effectively. Recent years have seen a growing public awareness of barrier function. This is a great thing, because barrier function is pivotal in healthy skin. Without strong barrier function, pathogens and toxins can penetrate more often, and these stressors result in accelerated ageing.
- › The Skin Microbiome is a driving force when it comes to maintaining healthy skin that ages appropriately. Because there are such deep and complex relationships between microbes and skin, an unbalanced microbiome has implications for skin health at every level. Here, we see rapidly growing interest and awareness from the public as well. While this field may have been relatively unheard of a few years back, the results from research here have been astounding. It is now fully established that the skin microbiome is critical for skin health. This includes the rate of ageing. A healthy microbiome means skin that ages slower.

When a client begins to seek anti-ageing solutions, it is because they have noticed signs that are concerning to them. There are several ways in which skin changes during ageing, so clients notice a number of hallmarks that lead them to seek treatment options.

We can divide these noticeable signs into three categories:

- › Visual Changes
- › Structural Changes
- › Textural Changes

Visual Changes

Visual changes refer to light's reflection off skin.

Redness

As we age, we see a change in the way redness is distributed. In healthy youthful skin, redness may express itself as flushed cheeks – a healthy and evolved way of conveying subtle emotion. However, mature skin may show red tone in a different way, such as a red nose and visible vasculature. The way redness is distributed can distinguish between health and signs of irritation or degradation of vascular systems.

Tone

Skin ageing is often accompanied by alterations in tone. There are a number of possible contributors here, but let's name a few: Sometimes, we see a yellowish pallor, which can indicate compromised liver function. Dietary carotenoids are an important part of skin's antioxidant function, and they contribute to healthy skin tone because they are pigmented compounds. Supply of nutrients and oxygen to skin cells via the bloodstream, as well as removal of waste products by the lymphatic system, likely play an important role in the visible quality of skin. It's probable that we can instinctively tell the difference in tone between skin that has good nutrient delivery and waste removal, and skin that does not.

Shine

Shine refers to reflectivity and how skin reflects ambient light. We see a reduction in the skin's ability to produce lipids as we age. When we can't produce a healthy amount of natural oils, we see a reduction in the reflectivity of skin and we lose that shine.

Dryness is strongly linked to surface lipids as the lipid barrier is important in retaining water in your skin. Dryness also links deeply to the tight junction barrier. Barrier function is understandably extremely important when it comes to hydration because if your skin has good barrier function, it retains water and doesn't allow the escape of water through the surface of the skin.

Pigmentation evenness

Pigmentation evenness – distribution of skin pigment – can be altered with age in two ways. Hypopigmentation (light areas) and hyperpigmentation (dark areas) both indicate the inability of the skin cells that monitor pigment to regulate their behaviour, which is a common occurrence with age.

Textural Changes

Wrinkles

Wrinkles can be divided into fine lines, which produce a crepe-like texture on the surface of the skin, and expression lines, which we do not believe are necessarily a negative. We want to approach the fine crepe-like textural change in the skin that can lead to the skin having a fragile appearance.

Pore Size

Sometimes, a change in pore size can accompany the ageing process. When referring to pore size, we refer to the footprint of the pilosebaceous unit (PSU) and how large the opening to the pilosebaceous unit is. A change in pore size in an ageing skin does not necessarily mean an increase in sebum output. It can be hormonally linked but can also be due to the weaker structure of the skin around the PSU.

Dryness

There is a strong correlation between ageing and dryness in skin. As skin ages, it produces less sebum. This directly impacts the lipid barrier, so transepidermal water loss (TEWL) increases. We also see the tight junction barrier decrease in functionality as keratinocytes become gradually less able to modulate tight junctions in the epidermis. Degradation in the lipid barrier and in the tight-junction barrier mean that skin loses more water through evaporation and hydration levels decrease as a result.

Roughness

As skin loses hydration due to decreased barrier integrity, there can be an associated increase in roughness. With less available water in the epidermis, the activity of enzymes is decreased as they lose the aqueous environment in which they operate. Enzymes in the epidermis become less able to break down desmosomes (the protein complexes that hold corneocytes together). As a result, corneocytes don't shed as effectively from the skin's surface, and the corneal layer becomes thicker. A thicker layer of dead skin cells results in a rougher texture.

Structural Changes

Firmness

Firmness is somewhat linked to subdermal fat levels, which diminish as we age. Possibly the biggest contributor is the structural protein collagen which is present in the dermis. Often, we see a reduction in the functional collagen levels in our skin as the years progress, resulting in a reduction of firmness.

Elasticity

While collagen is mostly responsible for providing the firm structure in skin, in the same networks, we also have protein strands made up of elastin. While elastin doesn't allow for the same firm, solid structure, it has a stretchy nature that allows it to return to its original shape after being pulled or misplaced. This gives skin its elastic quality, enabling it to bounce back. Elastin also degrades over time, resulting in a loss of elasticity as time progresses.

Both collagen and elastin are subject to a process called glycation, in which sugar molecules are attached to the protein fibres, creating linkage sites. If this happens too much, collagen and elastin networks become bound by crosslinking, creating rigid networks that don't function as they should.

Thickness

Delicate crepe-like skin and leathery thick skin can be seen as two contrasting outcomes of ageing. Underexposing ourselves to UV in the long term typically results

in a delicate crepe-like skin and on the opposite end of the spectrum, overexposing ourselves to UV in the long-term results in a leathery thickness (though this is generally not due to a thicker layer of living cells, but to a thicker corneal layer).

Turgidity

Turgidity is affected by sub-dermal fat layers. Hyaluronic Acid and the functionality of the skin barrier also play a big role in the plumpness and turgidity of the skin because of the roles they play in retaining water.

The Processes behind Ageing

Death is built into life at a cellular level. A commonly discussed topic here is the idea of senescence. Senescence in general refers to the process of deterioration with age, but in this context, we speak about cellular senescence. This is the process by which cells lose their ability to grow and divide, while altering their behaviour in some ways.

As skin ages, we see an increase in the density of senescent cells – these are cells that can no longer grow and divide, and they often have altered behaviour too.

So as time extends, the skin tissue contains more and more senescent cells, and we reach a point at which not enough of the cells can divide to effectively regenerate tissue. We want to extend the time we have before this point comes.

But why do we reach a point at which tissue functionality declines, and what determines when cells become senescent?

Broadly speaking, cells in the body fall into two overarching categories.

One group consists of **mitotic cells** — cells that retain the ability to divide through a process called mitosis. These divisions generate daughter cells that allow tissues to regenerate and maintain function. Examples include epithelial cells (such as keratinocytes), fibroblasts (which contribute to the structural framework of tissues), endothelial cells (which line blood vessels), and stem cells that differentiate into these cell types.

The second group comprises **post-mitotic cells**. These cells form tissues with very limited regenerative capacity, such as cardiac muscle and most nerve tissue. Once mature, these cells are largely incapable of division, and any limited regeneration that does occur depends on resident stem or progenitor cells.

While the presence of mitotic cells allows for ongoing tissue renewal, cell division comes with an inherent limitation. In order to divide, a cell must replicate its DNA so that each daughter cell receives a complete genetic copy.

Human DNA is organised into linear chromosomes. At the ends of each chromosome are protective, repetitive DNA sequences called **telomeres**, often compared to the plastic tips at the ends of shoelaces. These structures protect the functional genetic material during replication. However, due to the way the DNA polymerase machinery operates, a small portion of telomeric DNA is lost with each round of replication — a phenomenon known as the end-replication problem.

Initially, this loss is inconsequential, as telomeres do not encode functional genes. Over time, however, repeated cell divisions cause telomeres to shorten progressively. Once telomeres become critically short, they can no longer adequately protect the chromosome ends, increasing the risk of DNA damage during subsequent divisions.

Most human somatic cells can undergo a finite number of divisions — typically in the range of approximately 40–70 cycles, depending on cell type and environmental conditions — before this limit is reached. This upper boundary is known as the Hayflick limit.

When a cell reaches this limit, it activates a DNA damage response and permanently withdraws from the cell cycle. This state, known as **cellular senescence**, is a protective mechanism designed to prevent genomic instability and malignant transformation. Senescent cells remain metabolically active, but they no longer divide.

The concept of the Hayflick limit is highly relevant to skincare and aesthetic practices. Many conventional approaches aim to stimulate rapid cell turnover by inducing controlled injury or inflammation, prompting cells to proliferate in order to replace damaged or removed tissue. Once healing is complete, the skin may appear smoother and more youthful.

However, this strategy relies heavily on repeated cellular division. When proliferative demand is chronically elevated — particularly through frequent or aggressive interventions — cells progress more rapidly towards their replicative limits. Over time, this can contribute to increased cellular senescence, stem-cell exhaustion, and a diminished capacity for long-term tissue resilience.

As a result, while such interventions may deliver impressive short-term outcomes, excessive reliance on regenerative overdrive can contribute to accelerated ageing processes in the skin.

Because senescence directly affects the behaviour and function of skin cells, it plays a central role in many of the recognised hallmarks of ageing.

Let's take a closer look at some of the cellular changes we can observe during the ageing process.

Changes in keratinocyte function

Keratinocytes make up most of the cells in the epidermis. They form the barrier that controls the passage of substances through skin, as well as having very important immune functions. As time passes and keratinocytes start to approach their replicative limit, we see the rate of proliferation drop off and regeneration of the epidermis takes longer as a result. The epidermis begins to thin due to this decreased proliferative ability. Because keratinocytes form the skin barrier, we also see a reduced recovery rate for barrier function. There are always stressors in the environment, so compromised barrier recovery can result in increased penetration of immune threats and elevated inflammatory signalling.

Changes in keratinocyte gene expression can mean an increase in the expression of pro-inflammatory genes. When keratinocytes produce more stress signals, the cells around them start behaving in ways that increase the inflammatory baseline.

There is evidence to suggest that inflammatory events can act as initiators for hyperkeratinisation, which contributes to rough and dull skin.

Changes in fibroblast function

These cells form the “scaffolding” that builds the connective tissues in all our organs. They secrete the components of the extra-cellular matrix (ECM) in these tissues.

They are responsible for generating important structural proteins in skin, such as collagen and elastin, as well as important components like glycosaminoglycans (GAGs), hyaluronic acid included. In senescent fibroblasts, the genes that result in collagen and elastin production are downregulated. So, in aged skin, we see reduced production of collagen and elastin by fibroblasts. This means that the important networks that work to retain firmness and elasticity in healthy skin are not supported as well. We also see the degradation of collagen and elastin networks and a reduction in the population of fibroblasts, so there are fewer functional cells working to maintain the skin's structural components. The impact of these changes in fibroblast function is particularly important for structural and textural hallmarks of ageing. Firmness and elasticity are reduced due to damaged collagen and elastin networks, turgidity is reduced because fibroblasts don't produce as much Hyaluronic Acid and other GAGs and wrinkles become more apparent as the structure of skin is less resilient.

Changes in the melanocyte function

Melanocytes are the cell type responsible for the generation of pigments (primarily melanin), and for the transfer of those pigments to keratinocytes near the skin's surface.

When melanocytes become senescent, their functions are altered, as is true with any cell type. Age is also associated with an increase in levels of pro-inflammatory substances such as MMPs (matrix metalloproteinases). Melanocytes are sensitive to these substances and respond when they sense these stress signals unpredictably – either by becoming hyperactive or inactive.

So, we have more senescent melanocytes and more pro-inflammatory markers in older skin, so we see melanocytes becoming either hyper-active or inactive. When melanocytes are hyperactive, they deposit more melanin in surrounding tissues, while inactive melanocytes, of course, deposit less or none. This means either hyperpigmentation or hypopigmentation (or both). This process leads to the irregular pigmentation seen in older skin.

Changes in Sebocyte Function

Sebocytes are the cells responsible for sebum production. They exist in sebaceous glands, near the base of the pilosebaceous unit. As the functions of the tissues that generate sebocytes degrade, there is a decline in the ability of sebaceous glands to produce a healthy quantity of sebum. Decreased sebum production negatively impacts the lipid barrier and leads to reduced hydration. Sebum is also a key selective force employed by skin as a means of controlling microbial populations on skin, so changes in sebaceous output likely affect the balance of microbial populations on skin.

Due to the abovementioned alterations in cell behaviour, tissue function becomes less organised and efficient over time. This contributes to an increase in inflammatory signalling, as cells respond to reductions in nutrient delivery and waste removal.

An increase in inflammation involves elevated production of inflammatory markers like matrix metalloproteinases (MMPs), which break down collagen and elastin networks, further compromising the structural integrity of these important protein networks. The breakdown of collagen results in an accumulation of fragments thereof, which inhibits collagen synthesis in fibroblasts. This exacerbates the problem by limiting the regeneration of the damaged networks.

The inflammatory state is associated with an increase in cell turnover, as cells are forced to divide to replace lost or damaged tissue. This means the replicative limit is reached earlier

It is well-established that mismatches (mentioned above) contribute greatly to a rise in chronic inflammation. Given that inflammation accelerates the innate biological processes that lead to ageing signs, this elevated inflammatory baseline results in accelerated and premature ageing.

A significant contribution to chronic inflammation in skin can be attributed to dysbiosis in the skin microbiome. Some mismatches in modern society have heavily impacted the health of the skin's microbial ecology. The resulting dysbiosis in the skin microbiome has resulted in compromised barrier function. Beneficial microbes play an important role in maintaining the skin barrier by inducing the expression of tight junction proteins in keratinocytes. This allows the keratinocytes in the stratum granulosum to "stitch" their membranes together, restricting the passage of possible immune threats between cells and establishing a skin barrier with a greater level of control.

When these beneficial interactions are threatened by mismatches that affect commensal microbes, the tight junction barrier deteriorates, and the inflammatory baseline rises due to frequent activation of the immune system in response to penetrating pathogens and toxins.

We didn't evolve for the modern lifestyles we live, which disrupt our microbiomes and cause chronic inflammation, resulting in faster ageing. We can't go back to a hunter-gatherer lifestyle, so what can we do to solve this problem?

When creating products with ageing in mind, we've taken the following into consideration:

- › Considerations for inflammation
 - Reducing sub-clinical inflammation is important in slowing the rate of ageing. Probiotics and probiotic extracts reduce inflammation and calm the immune system. Anti-inflammatory actives provide a break in the inflammatory cascade and a chance at resolution, and Hyaluronic Acid hydrates and plumps, and has an anti-inflammatory effect on the skin when used at the appropriate molecular size. In reducing inflammation, we consider barrier function and the microbiome because a disruption in either of these results in an increase in inflammation.
- › Considerations for barrier function
 - To consider barrier function, we include probiotics and probiotic extracts to increase the quality and quantity of tight junctions and to protect the barrier from pathogens. We supplement with essential fatty acids to

improve the lipid barrier and keep the skin hydrated and plump. We carefully select oils to mimic sebum for sebum supplementation.

- › Considerations for microbiome
 - The microbiome plays an integral role in maintaining barrier function by communicating with skin to reinforce the tight junction barrier. Microbial communication with the immune system is also essential in avoiding immune hyperreactivity and reducing inflammation. Because of its key roles in all aspects of skin health, protecting the microbiome is a priority. Considerations for the microbiome include:
 - The application of prebiotics to shift skin's microbial ecology in a beneficial direction.
 - Probiotic extracts for increased AMP levels on skin (selectively killing and inhibiting pathogens).
 - Selected keystone Probiotic species to reintroduce interaction of the immune system with healthy commensals and adjust the conditions on skin, favouring a diversity of beneficial microbes.
- › Antioxidants – incorporating antioxidants into products to protect the structures in skin and protect genetic information for longer cell viability to ensure fewer senescent cells.
- › Tyrosinase inhibition for melanocyte behaviour.
- › Avoiding petrochemicals – carcinogens (genetic damage)

Key Ingredients

Probiotics

Probiotics are defined as living microorganisms which, when administered in adequate amounts, confer a benefit on the host (you). Note that, written into this definition, is the necessity that the microbes be living. Technically, a true probiotic must be alive. Ingredients that are inactive microbes (or preparations thereof) are known as postbiotics, which we'll cover in the next section.

Lactobacillus

Live *Lactobacillus*

We chose a consortium of three species of bacteria– all from the genus *Lactobacillus* - for the Probiotic Serum. These species have been chosen for their effect on skin and for their ability to work together synergistically.

We have identified a consortium of probiotic species that are integral to skin health and incorporated them into this ground-breaking formulation.

- › Protection – one of the primary functions of your skin's microbiome is to protect you from pathogenic microbes. If your microbial populations are low, there will be space and food available for invading microbes. We aim to increase synergistic microbial populations to the point that there are no available niches for invaders. This prevents activation of your skin's immune system and reduces the basic load on the skin.
- › Hydration – Lactic Acid is produced by your body to keep the pH of the skin in balance and to retain moisture on the surface of the skin. Recently it was discovered that the majority of the Lactic Acid on the skin is produced by microbes. *Lactobacillus* species are particularly efficient at producing Lactic Acid – hence their name. Barrier Function – T-junctions were only discovered in 2002 but this mode of cell binding is critical to skin health. Microbes modulate T-junctions and it is possible to radically improve barrier function by using probiotic microbes.
- › Communication – a large part of the function of the probiotic microbes in this serum is centred on the cellular communication with your skin cells. *Lactobacillus* cells can adhere to your skin cells (at specific binding sites) and cause chemical messages to flow from those cells that regulate the immune response from nearby cells. This reduces sub-clinical inflammation and slows ageing.

Live *Lactobacillus* has been included in the Probiotic Serum, Sensitive Serum and Clarifying Oil. We have also included Live *Lactobacillus* in the Probiotic Ampoule in our professional offering.

Postbiotic Ingredients

Tyndallised *Lactobacillus* (Level 3 probiotic)

- › Improves barrier function by increasing the quality and quantity of T-junctions in the stratum granulosum. A strong tight junction barrier will ensure a reduction in chronic inflammation in the skin
- › This ingredient contains three species of inactivated *Lactobacillus*

Human skin has evolved with intricate partnerships with microbial communities. The interaction between your skin and its microbes is made apparent by the fact that microbes are capable of affecting the way in which our immune systems behave. The skin microbiome, skin barrier function and the skin immune system are closely linked to each other and form a complex and highly regulated network that controls fundamental skin functions.

Skin cells are equipped with receptors that can recognise beneficial bacteria and these receptors operate on a lock-and-key mechanism that will respond to dead microbial cells. We use a carefully controlled process of heat inactivation that leaves surface proteins on the probiotic cells intact, allowing docking on these receptors. Skin cells then adjust immune responses and make changes that influence barrier function positively.

Tyndallised *Lactobacillus* have been included in the majority of leave-on retail products.

Professional exclusive products that include Tyndallised *Lactobacillus* are the Body Massage Cream, Hydroboost Ampoule, Intensity Ampoule, Bright Ampoule and Clarifying Ampoule.

Lactobacillus Lysate (Level 2 probiotic)

- › Concentrated Anti-Microbial Peptide complex
Lactobacilli are capable of producing anti-microbial peptides (or AMPs) that kill competing species or inhibit their growth.

Lactobacillus lysate is created by the fermentation of *Lactobacillus* to produce high numbers of probiotic cells, concentration of these bacterial cells, and finally lysis (breaking open) of the cells under high-pressure with lysosymes to release the cell contents, which contain AMPs.

AMPs will shift the populations of bacteria on the skin. Healthy skin microbes are able to grow in the presence of *Lactobacillus* AMPs, but these are toxic to opportunistic microbes.

Human skin has natural populations of *Lactobacillus* species, seeded during childbirth. This means that the beneficial microbes on and in us have evolved with

Lactobacillus species and the AMPs they produce. Opportunistic microbial invaders are more likely to have their growth inhibited by the AMPs. The ability to apply a selective pressure to promote healthy microbial populations seems more sensible than an antibiotic approach.

Lactobacillus lysates have been included in the majority of leave-on retail products..

Professional products including *Lactobacillus* lysates are the Sensitive Galvanic Gel, Gel Mask, Eye Contour Mask, Intensity Mask, Omega Mask, Facial Massage Cream, Hydroboost Ampoule, Intensity Ampoule, Bright Ampoule, Clarifying Ampoule, Hyaluronic Ampoule, Body Massage Cream, Detox Body Mask, Hand & Foot Mask and Body Butter.

Hyaluronic Acid

- › Increases hydration
- › Has a plumping effect on fine lines and wrinkles
- › Reduces inflammation

Hyaluronic Acid (HA) is a tricky ingredient but when it is used properly, it is one of the most effective anti-ageing ingredients in all of skincare. It reduces wrinkle depth and increases skin hydration, firmness, and elasticity.

We source our Hyaluronic Acid from bacteria rather than the usual source, which is animal cartilage or rooster combs.

Hyaluronic Acid forms long chains in its molecular structure. These chains can vary in length. The function of HA in skin is greatly dependent upon its molecular size. Short fragments are pro-inflammatory, while very long chain HA is anti-inflammatory, but is too large to penetrate the skin. We use size-controlled HA that is small enough to penetrate into deeper layers, but large enough to interrupt the cytokine cascade for an anti-inflammatory effect.

This substance also holds a lot of water, so draws hydration into the skin and holds it there, helping to combat the dryness often associated with ageing skin.

Hyaluronic Acid has been included in Hydro Moisturiser, Nourish Moisturiser, Light Moisturiser, Deep Moisturiser, Rich Moisturiser, Deep Moisturiser, Omega Light Moisturiser, Omega Deep Moisturiser, Omega Rich Moisturiser, Defence Moisturiser, Restorative Moisturiser, Sensitive Eye Cream, Eye & Lip Cream, Eye Contour Cream, Resurrect Serum, Hyaluronic Serum, Intensity Serum, Ageless Serum, and the Cream Mask

Professional products containing Hyaluronic Acid include the Hydroboost Ampoule, Hyaluronic Ampoule, Clarifying Ampoule, Intensity Ampoule, Eye Contour Cream, Omega Mask, Intensity Mask and Gel Mask.

Kigelia africana

Kigelia africana, commonly known as the “Sausage Tree”, produces a large, elongated fruit, from which it gets this name. Extracts of the fruit can provide a range of benefits:

- › Excellent firming effect on the dermis
- › Restores elasticity
- › Tightening properties
- › Decreases pigmentation, depending on the extraction method
- › Results are seen after two weeks of continuous use.

Kigelia africana has been included in Cream Mask, Light Moisturiser, Deep Moisturiser, Rich Moisturiser, Ultra Moisturiser, Defence Moisturiser, Restorative Moisturiser, Eye & Lip Cream, Eye Contour Cream, Intensity Serum, Ageless Serum, Cream Mask, Hand Cream, Lip Conditioner and the Rich Body Moisturiser.

Kigelia africana has been included in our professional product range in the Bright Ampoule.

Bakuchiol

Bakuchiol is a functional analogue of Retinol and is one of our hero plant-based ingredients. It delivers the anti-ageing benefits of retinol with a much lower incidence of adverse reactions. Studies have shown that Bakuchiol:

- › Decreases wrinkle depth
- › Decreases hyperpigmentation associated with ageing
- › Reduces skin redness and skin roughness
- › Stimulates the production of new Collagen I, III and IV, supporting the structural networks that are affected by ageing processes
- › Inhibits MMP's to reduce the degradation of structural proteins
- › Downregulates many pro-inflammatory genes in skin cells.

This range of activities allows Bakuchiol to intervene in skin ageing in multiple areas, slowing the processes that lead to unwanted signs and even improving existing signs.

Bakuchiol has been included in the Resurrect Serum, Bakuchiol Serum, Clarifying Oil and Clarifying Spot Corrector.

Supporting Ingredients

Myrothamnus flabellifolia Extract

Myrothamnus flabellifolia is more commonly known as the “Resurrection Plant”, due to its ability to dry out entirely during droughts that last months. When rain falls, the plant bursts into life, with seemingly dead twigs re-opening leaves and establishing a fully green and living plant within a matter of hours. We source sustainably harvested plant material from the Namibian plant population, which was geographically separated from other populations 4 million years ago and has a distinct antioxidant profile. The extract:

- › Has a high antioxidant content, with particularly high levels of the polyphenol 3,4,5-tri-O-galloylquinic acid, a potent antioxidant that the plant employs to protect itself from genetic damage during periods of desiccation.
- › Has been shown by testing in independent laboratories to boost skin hydration for 24 hours after a single application

Myrothamnus flabellifolia has been included in the Sensitive Eye Cream, Resurrect Serum, Hyaluronic Serum, Clarifying Serum, and Sunscreen.

Myrothamnus flabellifolia has been included in the Professional Range in the Hydroboost Ampoule, Intensity Ampoule, Eye Contour Mask, Intensity Mask, Omega Mask and Body Butter.

Ximenia americana

Ximenia americana is commonly known as the wild plum. The fruit contains one large seed that has up to 60% oil content. Traditionally, Ximenia oil is pressed from the seeds of *Ximenia americana*. tree is found throughout the tropics and the cold-pressed seed yields thick, sticky oil, known as “Mumpeke Oil” amongst locals. After degumming the oil is golden with a unique skin feel.

There are two interesting aspects to the oil.

Firstly, **Ximenynic Acid makes up around 20% of the oil.** This fatty acid contains a very rare triple bond in the carbon chain. This bond is quite reactive and **when the oil is exposed to UV light or free radicals, it links with other fatty acids to form a network that can act as a protective layer on skin.** This strange fatty acid also increases blood flow to the skin.

Ximenia oil also contains more than 30% Very Long Chain Fatty Acids, which are uncommon in nature. Human sebum contains these rare fatty acids and this unique nutrient source is digestible by our co-evolved microbes but is more difficult for pathogens to use as energy. So this oil works a lot like a skin prebiotic.

Both the Ximenynic Acid and the Very Long Chain Fatty Acids create a skin feel that is quite unique. The oil is quite thick and coats the skin for the first couple of minutes and then quickly penetrates to leave the skin matte but supple. Esse uses Ximenia Oil containing long chain fatty acids like Ximenynic Acid to support the lipid barrier and improve hydration for the client.

- › Improves skin firmness and elasticity
- › Nourishing, moisturizing, revitalizing and softening

Ximenia americana has been included in Protect Oil, the Resurrect Serum and Body Butter.

Additional Ingredients

Harpagophytum procumbens

Harpagophytum procumbens, more commonly known as “Devil's Claw”, is a Namibian plant that gets its name from the structure of its seed pods. We make use of an extract of its root, which provides the following benefits:

- › Anti-inflammatory
- › Protects collagen and elastin from damage
- › Improves the signs of ageing
- › Emollient properties draw water into the skin

Harpagophytum procumbens has been included in the Defence Moisturiser, Restorative Moisturiser, Eye Contour Cream, Intensity Serum, and Ageless Serum.

Gamma Aminobutyric Acid (GABA)

GABA is an amino acid that functions as a neurotransmitter in the central nervous system. GABA levels in the body decrease with age. There are GABA receptors on the skin surface and when GABA activates these receptors, it can absorb into skin.

- › Improves skin firmness
- › Promotes the synthesis of Hyaluronic Acid and Collagen
- › Relaxes tense muscles and reduces small wrinkles

In the epidermis, GABA can promote epidermal cell proliferation and the production of involucrin and glutathione. This can help to repair barrier function by improving the structure of the stratum corneum. This also leads to an improvement of skin firmness.

In the dermis, GABA can promote fibroblast proliferation and synthesis of HA and collagen, thus improving skin moisture and elasticity.

GABA has been included in the Resurrect Serum.

Acmella oleracea

This key ingredient is extracted from a small plant called “Mafane” by locals. The flowers are often called Electric Daisies or Buzz Buttons by chefs due to the sensation experienced when eating them. This effect is due to the active component Spilanthol, which (when used in a cosmetic product):

- › Penetrates the skin and has muscle relaxant properties, rapidly reducing the appearance of fine lines and wrinkles. Effect shows after 1-3 hours and is reversible over 18-24 hours.

Mafane has been included in the Intensity Serum, Intensity Mask, and Intensity Ampoule.

Bellis perennis

Bellis perennis targets ageing by having the following effects on the skin:

- › Inhibits melanogenesis by inhibiting tyrosinase activity
- › Reduces the transfer of melanosomes from melanocytes to normal skin cells
- › Strong lightening properties as both a corrective and preventative measure

Bellis perennis has been included in the Eye Contour Cream and Eye Contour Mask.

Albizia julibrissin

- › Improves collagen and elastin synthesis
- › Lifts the upper eyelid, reduces crow's feet, and diminishes puffiness
- › Helps prevent the rupture of capillaries below the eye

Albizia julibrissin directly addresses and protects against glycation, preventing fine lines and wrinkles associated with loss of elasticity and damage to the ECM resulting in the loss of skin integrity.

Albizia julibrissin has been included in the Sensitive Eye Cream, Eye Contour Cream and Eye Contour Mask.

Darutoside

Darutoside is obtained from a plant called *Sigesbeckia orientalis*. Benefits include:

- › Strong antioxidant properties
- › Regenerating
- › Restores collagen
- › Improves photo-ageing
- › Healing and anti-inflammatory

Its antioxidant and anti-inflammatory activities protect collagen and elastin in the skin, allowing tissue repair to take place more effectively. This means an anti-ageing effect for the client and offers benefits for photo-ageing and healing.

Darutoside has been included in the Eye Contour Cream, Eye Contour Mask and Sensitive Eye Cream

Lilium candidum

Lilium candidum is commonly known as the White Lily.

- › Skin conditioning
- › Inhibits melanin transfer, reducing dark spots

- › Reduces under-eye “bags”
- › Improves elasticity

Lilium candidum has been included in the Ageless Serum.

Marapuama Bark Extract

The plant, *Ptychopetalum Olacoides*, provides an extract known as Marapuama Bark Extract.

- › Strong antioxidant properties
- › Wrinkle reducing
- › Skin lightening and brightening effects
- › Reduces age spots

Marapuama Bark Extract has been included in the Ageless Serum.