



# LOVE YOUR BODY

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## HEALTHY SKIN

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30 CAPSULES

GLUTEN FREE

SOY FREE

A DIETARY SUPPLEMENT  
TO SUPPORT SKIN  
INTEGRITY AND  
HYDRATION<sup>†</sup>

HEALTHY AGING SUPPORT<sup>†</sup>

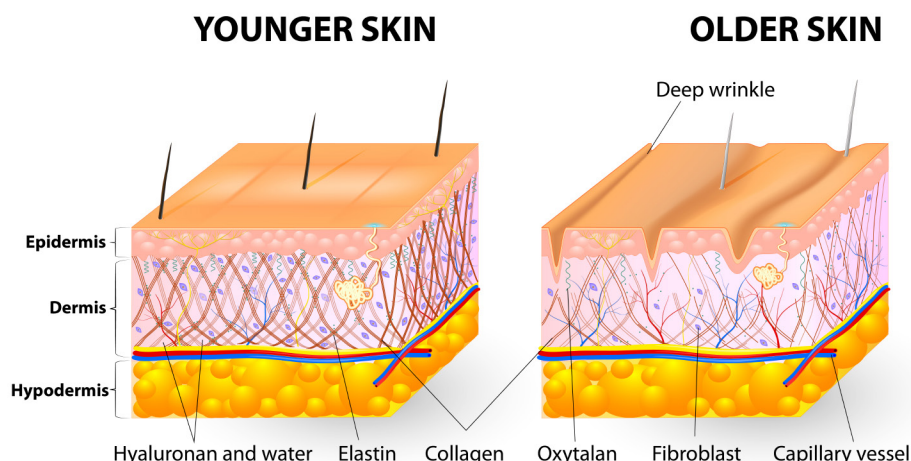
# SKIN HEALTH, DISEASE, AND AGING

Skin is the largest organ in the body, covering approximately 20 square feet. It is a barrier against the outside world and protects the body from wind, heat, cold, ultraviolet light, infection, injury, and more. It regulates body temperature, water, and lipid stores.<sup>1</sup>

Skin conditions, when taken together, are the fourth leading cause of all human diseases and afflict nearly 30% of the world's population.<sup>2</sup> In 2004, skin diseases cost approximately \$96 billion in the United States.<sup>2</sup> Acne is the most common skin disease, affecting approximately 50 million Americans each year.<sup>3</sup> Conditions that irritate, inflame, or clog the skin can lead to redness, burning, swelling, and itching. Allergens, irritants, injury, aging, certain diseases, and/or immune system dysfunction interact with a person's genetics to produce skin conditions. Some examples are: acne, eczema, hives, impetigo, psoriasis, dermatitis, rosacea, wrinkles, or skin cancer.<sup>4</sup> In response to this disease burden, there is considerable interest in adjunctive nutritional treatments that can promote healthy skin from the inside.

The skin is made up of three layers: the epidermis, dermis and hypodermis. The most superficial layer of the epidermis is the stratum corneum. It helps to retain moisture, protect against abrasion, microorganisms, and it is a barrier against the outside environment. Lipids in the stratum corneum are required to make a healthy skin barrier. Blood supply to the skin provides nutrients important for skin. When the skin barrier is damaged, skin loses moisture, which is called "transepidermal water loss." This damage interferes with lipid synthesis, cellular metabolism, and the uptake of nutrients such as essential fatty acids and protein.<sup>5</sup>

Aged skin has characteristic changes to the dermis and epidermis, which have been attributed to decreasing collagen and lipid content, loss of fibroblasts and mast cells, and changes to the collagen fiber matrix (loosening).<sup>1</sup> Collagen gives skin firmness and structure and supports the middle layer –or the dermis– of the skin. When the epidermis doesn't hold moisture, it leads to fine lines on the skin's surface. As collagen and elastin break down, the skin's support structure weakens. When fat disappears from the deepest layers of skin, it leads to sagging. This may be the result of glycation, poor nutrition, inflammation, and oxidation.



**FIGURE 1.** Illustration of healthier young skin compared to aging skin. Fibroblasts are connective tissue cells that produce collagen and fibers and are important for skin architecture. They produce and organize the extracellular matrix of the dermis and they regulate skin physiology.<sup>6</sup> Collagen gives skin firmness and structure and supports the middle layer –or the dermis– of the skin.

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## ADVANCED GLYCATION END PRODUCTS AND THE “SUGAR SAG”

Glycation is believed to be one mechanism of skin aging. It is the nonenzymatic process of covalently bonding sugar molecules to proteins, lipids, or nucleic acids,<sup>7</sup> resulting in molecules called advanced glycation end products (AGEs).<sup>8</sup> AGEs accumulate in tissues and in the skin<sup>7,8</sup> and have been implicated in diabetes, atherosclerosis, Alzheimer's,<sup>9</sup> end stage renal disease, and chronic obstructive pulmonary disease.<sup>7</sup> AGEs can be produced in the body under hyperglycemic conditions or they can be consumed in the diet. They are higher in heat-treated foods, rich in proteins and lipids.<sup>7,10</sup> AGEs damage proteins, lipids, and nucleic acid and therefore interfere with healthy cellular function.

Glycation changes skin's structure, morphology, and function and has even been colloquially termed the “sugar sag.” AGEs accumulate in skin and may play a significant role in photoaging.<sup>9</sup> AGEs stiffen collagen, distort its structure and function, decrease elasticity,<sup>9</sup> inhibit crosslinking of fibers, trigger fibroblast cell death,<sup>11</sup> and make collagen resistant to turnover and replacement.<sup>7</sup> AGEs increase inflammation and oxidative stress and contribute to vascular damage.<sup>8,10</sup> Keratinocytes exposed to AGEs express pro-inflammatory mediators, are less mobile, and go into senescence prematurely.<sup>7</sup>

## HEALTHY SKIN

We have developed a novel formula that promotes beautiful skin from within. It incorporates food-grade ingredients that slow down and help with the effects of aging on skin by working from the inside. Unlike other skin formulas that focus primarily on skin hydration, Healthy Skin has ingredients that promote a healthy inflammatory response and glycation processes, while increasing hydration and elasticity. This helps create skin that is firm and resilient, hydrated, with fewer wrinkles and red blotches, with pores that are smaller and less noticeable, and provides support for skin experiencing inflammation, irritation and redness.\*

Healthy Skin promotes healthy hair and nails as well as skin, making it the most comprehensive skin and beauty formula on the market. Sakura extract decreased hair roughness, decreased cuticle damage, and helped hair retain moisture.<sup>12</sup> Healthy Skin also contains 3,000 micrograms of biotin, an essential B vitamin that is necessary for hair and nail growth. It is a cofactor for carboxylase enzymes, which break down fats, proteins, and carbohydrates for cellular energy production, making it critical for normal cell growth and division.\*

Sakura, or cherry blossom extract, promotes smooth, supple, even-toned skin with smaller pores by inhibiting glycation and stimulating collagen production. It also promotes healthy nitric oxide levels in models of inflammation and aids in the reduction of skin

### Love Your Body's Healthy Skin Formula:

- Makes skin supple and smooth\*
- Hydrates skin and hair\*
- Supports a healthy inflammatory response\*
- Helps protect against wrinkles\*
- Lightens pores, spots, and red blotches\*
- Promotes hair and nail growth\*
- Supports hair and nail strength\*

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irritation. Rice ceramides help skin retain moisture and barrier function, diminishing wrinkles and making skin smooth. Salmon proteoglycans provide structural support to skin, enhance elasticity, brighten skin, and promote healthy inflammatory responses. Biotin is a critical nutrient for hair, skin, and nails and Sakura extract helps retain hair moisture and smoothness. Together, these ingredients protect skin, promote healthy cellular function, supports the body against the damaging effects of inflammation, and nourish skin, hair, and nails. Healthy Skin is an excellent nutritional formula to support beauty from within and healthy aging.\*

## SUPPLEMENT FACTS

Serving Size 1 Capsule  
Servings Per Container 30

Amount Per Serving	% Daily Value
Biotin 3,000 mcg	1,000%
Florabella™ [Sakura ( <i>Prunus lannesiana</i> Wils. Cv. <i>Sekiyama</i> ) Flower Extract] 100 mg	*
Ceramide-PCD® 40 mg	*
Juvecol® (Proprietary proteoglycan) 25 mg	*
*Daily Value not established.	

Other ingredients: vegetable cellulose (capsule), microcrystalline cellulose, vegetarian leucine.

## HEALTHY SKIN: THE SCIENCE BEHIND THE INGREDIENTS

### SAKURA EXTRACT REDUCES GLYCATION END PRODUCTS

Cherry blossoms are known as Sakura flowers in Japan. *Prunus yedoensis* Matsumura is the famous landscaping cherry blossom variety known in the United States, Japan, and Korea. The proprietary extract of *Prunus lannesiana*, Sakura extract (cherry blossom), is used in food and in cosmetics.<sup>11</sup> Cherry trees have an excellent safety profile<sup>13</sup> and a long tradition of medicinal use in Asia for heart conditions, beriberi, dropsy, mastitis, toothache, arthritis, gout pain, and as an emmenagogue.\*<sup>14</sup>

Sakura extract moisturizes and whitens skin and supports collagen production by helping prevent glycation. Sakura extract significantly inhibits the production of AGEs as well as fibroblast cell death (apoptosis) that is often triggered by AGEs.<sup>11</sup> Sakura extract recovered collagen lattice formation of glycated fibroblasts.<sup>11</sup> Cherry blossom extract's radical scavenging activity also inhibits AGE production.<sup>11</sup> The anti-glycation effect was also reported in a clinical study of lingonberry and cherry blossom, which reduced AGEs by mitigating glycation stress.\*<sup>13</sup>

#### Sakura (Cherry Blossom) Extract:

- Inhibits AGE\*
- Inhibits fibroblast apoptosis\*
- Promotes collagen production\*
- Promotes collagen matrix formation\*
- Inhibits melanoma/tyrosinase\*
- Improves smoothness\*
- Reduces pore size\*
- Diminishes skin redness and discoloration\*
- Enhances hair smoothness and moisture\*

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## SAKURA EXTRACT MAY HELP PREVENT INFLAMMATION

Sakura extract and one of its active ingredients, caffeoyl glucose, have an anti-inflammatory effect in skin cells, decreasing NO production in the presence of LPS-initiated inflammation.<sup>15</sup> A closely related cherry blossom species (*Prunus yedoensis*), also used for food and as a soothing agent in skincare products,<sup>16</sup> reduced nitric oxide production in macrophages when exposed to LPS. It was determined to be an anti-inflammatory agent in cells and in humans and reduced contact dermatitis and inflammation in irritated skin in 40 human subjects.<sup>16</sup>

A double-blind placebo-controlled study of Sakura extract in 20 Japanese women with skin conditions showed that Sakura extract reduced AGEs, prevented the loss of skin elasticity, whitened skin and spots, reduced size small, and improved the moisture content and smoothness of skin.<sup>12</sup> In a clinical study, Sakura extract decreased skin AGEs by 7% as compared to placebo which decreased AGEs by only 3%.<sup>12</sup> Sakura extract decreased hair roughness, decreased cuticle damage, and helped hair retain moisture in the patient population.<sup>12</sup>

**RICE CERAMIDES** (*Oryza*) are plant-based lipids that preserve skin moisture and elasticity in DaVinci® Laboratories' Skin Benefits™. Ceramides are sphingolipids that are made in the stratum corneum and provide barrier function, skin structure, retain moisture, and prevent invasion of foreign bodies. Research shows that ceramides are low in the stratum corneum in patients with senile xeroderma and atopic dermatitis, suggesting that low ceramides may contribute to skin disease.<sup>17</sup> Also found in the brain, it has been extracted from bovine brains since 1884 as a cosmetic ingredient. To avoid the risk of mad cow disease, synthetic ceramides are widely used to hold moisture in the skin corneum. Plant-based ceramides present a natural alternative to bovine-derived, or synthetic, ceramides.<sup>17</sup>

When skin loses moisture, cells become dehydrated. This leads to rough, wrinkled skin that is more vulnerable to external stressors. Studies suggest that ceramides help maintain moisture and barrier function of the stratum corneum and can prevent the formation of wrinkles. Rice ceramides have been shown to have a superior moisturizing effect over other ceramides in cell studies, with a moisturizing ratio of 35%. Rice ceramides inhibit melanin production and decrease tyrosinase activity in vitro, which produces a lightening effect on skin.<sup>17</sup>

In a double-blind, placebo-controlled study, 40 mg of rice ceramides taken orally for six weeks reduced skin roughness and reduced wrinkles by both objective and subjective measurements. It improved skin smoothness and moisture retention as measured by water content under the eye.<sup>17</sup>

**JUVECOL®** is a high-quality purified proteoglycan extract from salmon cartilage, using salmon caught in specific areas of Japan. It promotes skin elasticity, reduces under eye wrinkles, and lightens pores and blotchy skin. Proteoglycans are found in connective tissues such as skin, bone, and cartilage and are involved in cell growth, adhesion, and differentiation.<sup>12</sup> They form a complex with collagen, fibronectin, hyaluronic acid, laminin, and other glycoproteins.<sup>14</sup> Proteoglycans from salmon cartilage have been traditionally eaten in Japan to promote health and maintain joint health.\*

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In a randomized, double-blind, placebo-controlled human clinical study of 19 healthy subjects, salmon proteoglycans markedly improved the look and feel of skin.<sup>1</sup> There was a significant improvement in skin viscoelasticity in those who took salmon cartilage proteoglycans for two weeks. Skin looked brighter: there were fewer conspicuous pores and darkened pores. The number of skin blotches decreased significantly after taking salmon proteoglycans and subjects had fewer under-eye wrinkles than the placebo group.<sup>\*1</sup>

Salmon cartilage proteoglycans have been found to suppress inflammatory responses in cells and in animal models.<sup>14</sup> Specifically, salmon cartilage proteoglycans suppressed inflammation in macrophages that were exposed to heat-killed bacteria and they reduced colitis and autoimmune encephalomyelitis in mice.<sup>15</sup> Interferon-gamma and other pro-inflammatory cytokines were decreased.<sup>15</sup> Proteoglycans from salmon cartilage have also been shown to improve wound healing in fibroblasts.<sup>16</sup> In mice, salmon proteoglycans favorably modified intestinal bacteria, leading authors to conclude that the impact on inflammatory response may be attributed to its effects on the gut microbiota.<sup>\*17</sup>

## BIOTIN

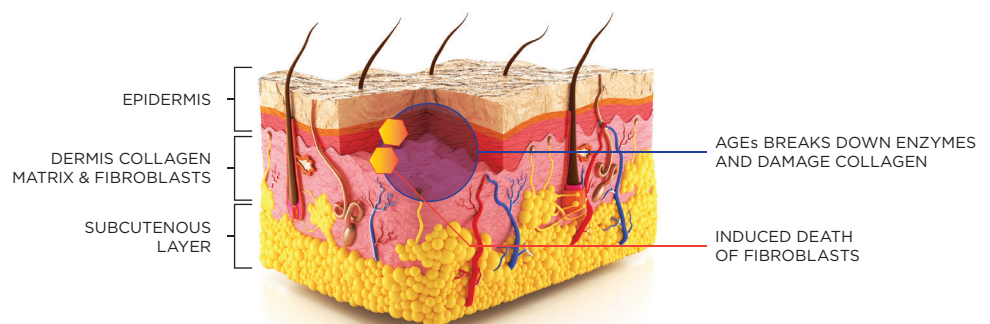
Biotin is an essential water-soluble B vitamin and a cofactor for carboxylase enzymes, which break down fats, proteins, and carbohydrates to make cellular energy. Because of its role in healthy metabolism and growth, biotin is an important nutrient for healthy skin, hair, and nails. Biotin deficiency causes hair loss, skin rash, and conjunctivitis. These conditions rapidly resolve with daily biotin supplementation. Biotin is necessary for hair and nail growth and biotin deficiency can cause hair thinning and loss of hair color.<sup>22</sup> Biotin has been used to treat brittle and splitting fingernails.<sup>23</sup>

## CONCLUSIONS

Healthy Skin is an excellent nutritional formula to support beauty from within and counteract the effects of aging. The natural, pure ingredients help to lighten red blotches, spots, and large, dark pores. It makes skin smooth and helps with wrinkles by enhancing moisture retention. Skin is healthy and supple by stimulating collagen production. Sakura extract and Juvecol<sup>®</sup> enhance healthy skin by supporting the body's response to inflammation and helping prevent irritation. Finally, Sakura extract hydrates hair and decreases cuticle damage while biotin promotes strong, healthy hair and nails. The combination of these health-promoting, safe, and naturally-sourced ingredients makes Healthy Skin the most comprehensive skin and beauty formula on the market and truly produces beauty from within.\*

## GLYCATION OF SKIN

DAMAGE OF DERMIS COLLAGEN  
LEADING TO AGING SKIN



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