

# NUTRITION + SKIN HEALTH

*Excerpt from The Skin Boss, by Courtney Sykes*

There is a magical connection between nutrition and skin health, as the skin is truly THE marker of healthy or unhealthy nutrition habits. In the world of beauty, the saying "you are what you eat" holds more truth than ever before. The skin is not just a barrier; it's a reflection of true internal health. And while skincare products play their part, the foundation of radiant skin starts from within. For skincare enthusiasts looking to elevate their skin health game, understanding the intricate relationship between nutrition and skin can be an evolutionary game-changer!

## Why are Antioxidants the "Superheroes" of the Human Body?

Antioxidants, the best friend of all the cells in your body, are compounds found in various foods, particularly fruits and vegetables, that help protect cells against damage from free radicals. These free radicals are unstable molecules that can cause oxidative stress, leading to cellular damage and aging.

Antioxidants play a crucial role in maintaining skin health by protecting it from oxidative stress and free radical damage. These free radicals, which can be generated by exposure to UV rays, pollution, and other environmental factors, can lead to premature aging, wrinkles, and other skin issues. Antioxidants such as vitamins C and E, as well as beta-carotene, work to neutralize these harmful molecules, thereby helping to preserve the skin's youthful appearance and overall integrity. Including antioxidant-rich foods like berries, nuts, and leafy greens within your day as a skincare enthusiast, as well as using skincare products fortified with antioxidants, can significantly enhance the skin's resilience and vibrancy.

Apart from protecting the skin externally, antioxidants also play a role in maintaining overall health and wellness. Research has shown that daily nutrition intake high in antioxidants can help reduce the risk of chronic diseases such as heart disease, cancer, and diabetes. This is due to their ability to combat inflammation and cell damage caused by free radicals.

In addition to consuming antioxidants through food and skincare products, our bodies also produce their own natural antioxidants. These include enzymes like superoxide dismutase (SOD) and catalase, which work together to neutralize free radicals within our cells. However, as we age, our body's production of these natural antioxidants decreases, making it even more important to incorporate antioxidant-rich foods and products into our daily routine.

Furthermore, certain lifestyle habits can also deplete the body's antioxidant levels. Smoking, excessive alcohol consumption, and a diet high in processed foods can all contribute to higher oxidative stress levels and lower antioxidant levels in the body. Making healthy choices and incorporating more fruits, vegetables, and whole foods into the daily nutrition intake of a skincare enthusiast can help replenish these antioxidants and protect overall health!

When it comes to skin health, antioxidants play a crucial role:

1. **Neutralizing Free Radicals:** Antioxidants like vitamins C and E neutralize free radicals, preventing them from damaging skin cells and collagen.
2. **Promoting Skin Repair:** They aid in skin repair by accelerating the healing process of damaged skin.

3. **Enhancing Skin Texture:** Regular intake of antioxidant-rich foods can improve skin texture and reduce the signs of aging such as wrinkles and fine lines.
4. **Brightening Complexion:** Antioxidants can inhibit melanin production, leading to a brighter and more even complexion.

Oxidative stress, on the other hand, occurs when there is an imbalance between the production of reactive oxygen species (ROS) and the body's ability to detoxify these harmful by-products through antioxidants. This imbalance can lead to cellular and tissue damage, contributing to aging and various diseases such as cancer, cardiovascular diseases, and neurodegenerative disorders. Factors such as poor diet, pollution, radiation, and smoking can exacerbate oxidative stress. Understanding and mitigating oxidative stress through lifestyle changes and dietary choices rich in antioxidants is crucial for maintaining overall health and preventing chronic diseases.

Oxidative stress is a natural process that occurs in the body as a result of normal cellular metabolism. Our cells constantly produce ROS as by-products of energy production. However, our bodies also have mechanisms in place to neutralize these harmful molecules. This delicate balance between ROS production and detoxification is crucial for maintaining optimal health.

ROS can cause oxidative damage to lipids, proteins, and DNA if not properly neutralized. This can lead to various diseases and conditions such as inflammation, tissue injury, and mutations in DNA that can ultimately result in cancer. In addition, oxidative stress has been linked to the progression of age-related diseases such as Alzheimer's and Parkinson's. However, it is important to note that not all ROS are harmful. In fact, they also play important roles in cellular signaling and immune function. The key is maintaining a balance between beneficial and harmful levels of ROS.

Antioxidant-rich FOODS play a critical role in skin health. While today's bandwagon may be focused on high protein through massive consumption of animal meat at all times, my personal philosophy is to not massively consume hormone-laden animal products as a primary source of daily food intake. The daily nutritional intake of any human focused on long-term health and skincare success should be a major focus on antioxidant intake through fruits and vegetables - with some lean animal protein sprinkled throughout. *More of my personal thoughts on animal protein as a skincare practitioner are listed below.*

#### Top Antioxidant-Rich Foods for Skin

- **Berries:** Blueberries, strawberries, and raspberries are packed with vitamins and antioxidants.
- **Citrus Fruits:** Oranges, lemons, and grapefruits are rich in vitamin C.
- **Leafy Greens:** Spinach, kale, and Swiss chard provide a plethora of antioxidants and other essential nutrients.
- **Nuts and Seeds:** Almonds, walnuts, and sunflower seeds are excellent sources of vitamin E.
- **Colorful Vegetables:** Carrots, bell peppers, and sweet potatoes are rich in beta-carotene, a precursor to vitamin A.

#### Why are Free Radicals the "Hidden Threat"?

Free radicals are highly reactive molecules produced naturally as a byproduct of metabolism, but also through exposure to pollutants, UV radiation, and toxins. They have unpaired electrons, making them chemically unstable.

## How Free Radicals Affect the Skin

When free radicals accumulate, they cause oxidative stress, which leads to:

1. **Collagen Breakdown:** Enzymes activated by free radicals can break down collagen, weakening the skin structure.
2. **Pigmentation Issues:** Free radicals can stimulate melanin production, causing hyperpigmentation and uneven skin tone.
3. **Inflammation:** They can trigger inflammatory responses, exacerbating conditions like acne, eczema, and rosacea.
4. **Accelerated Aging:** The cumulative damage from free radicals manifests as premature aging, characterized by wrinkles, sagging, and dullness.

## The Inflammation Cascade: A Deeper Dive

### What is the Inflammation Cascade?

The inflammation cascade is a series of biochemical events triggered by the immune system in response to injury, infection, or harmful stimuli like free radicals. While acute inflammation is a healing process, chronic inflammation can lead to various skin issues.

### Medical Markers of Inflammation for the Skincare Practitioner

Certain biomarkers are indicative of inflammation in the body as seen below. These markers are CRITICAL for the skincare practitioner to send their clients to research and obtain with a medical professional, in order to achieve maximum understanding and a well-rounded consultation based on holistic ideologies!

1. **C-Reactive Protein (CRP):** High levels indicate systemic inflammation.
2. **Cytokines:** These signaling proteins, like interleukins and TNF-alpha, play a central role in inflammatory processes.
3. **Prostaglandins:** Lipid compounds involved in the inflammation response.

## Understanding C-Reactive Protein (CRP) and Systemic Inflammation

C-Reactive Protein (CRP) is a crucial biomarker in the realm of diagnostic medicine, offering valuable insights into the presence and severity of systemic inflammation. As skincare practitioners, understanding CRP's role and implications can significantly enhance client care and management.

### What is C-Reactive Protein (CRP)?

CRP is an acute-phase protein produced predominantly by the liver in response to inflammation. Its production is stimulated by cytokines such as interleukin-6 (IL-6), interleukin-1 $\beta$  (IL-1 $\beta$ ), and tumor necrosis factor- $\alpha$  (TNF- $\alpha$ ), which are released during inflammatory processes. Elevated levels of CRP in the blood indicate an ongoing inflammatory response, making it a reliable marker for various conditions.

## Mechanism of CRP Production

When tissue injury or infection occurs, the body's immune system responds by releasing inflammatory cytokines into the bloodstream. These cytokines travel to the liver, prompting hepatocytes to synthesize and secrete CRP. CRP functions by binding to phosphocholine expressed on the surface of dead or dying cells (and some types of bacteria) to activate the complement system via the C1Q complex, thereby promoting phagocytosis by macrophages.

## Clinical Significance of Elevated CRP Levels

### Infection and Sepsis

CRP is one of the earliest markers to rise in response to bacterial infections and sepsis. Its levels can increase dramatically within hours of the onset of infection, making it an essential tool for early diagnosis and monitoring the efficacy of treatment.

### Chronic Inflammatory Diseases

Conditions such as rheumatoid arthritis (RA), systemic lupus erythematosus (SLE), and inflammatory bowel disease (IBD) often present with elevated CRP levels. Monitoring CRP levels in these patients can help assess disease activity and therapeutic response.

### Cardiovascular Disease

In recent years, CRP has gained prominence as a marker for cardiovascular risk. Elevated CRP levels correlate with a higher risk of atherosclerosis, myocardial infarction, and stroke. High-sensitivity CRP (hs-CRP) assays are particularly useful for detecting low-grade inflammation associated with cardiovascular disease.

### Cancer

Chronic inflammation is a recognized risk factor for various cancers. Elevated CRP levels have been observed in patients with malignancies such as lymphoma, colorectal cancer, and ovarian cancer. CRP can aid in identifying at-risk populations and monitoring disease progression.

### Surgical Outcomes

Perioperative inflammation can be a predictor of post-surgical complications. Measuring CRP levels before and after surgery can help identify patients at higher risk of complications such as infection or delayed healing.

## Interpreting CRP Levels

CRP levels are typically measured using a blood test. Here is a general guide to interpreting CRP concentrations:

- Normal Range: <1 mg/L

- Mild Elevation: 1-10 mg/L (possible chronic low-grade inflammation or minor infection)
- Moderate Elevation: 10-100 mg/L (acute inflammation, significant infection, or flare-up of chronic inflammatory disease)
- High Elevation: >100 mg/L (severe infection, systemic inflammation, or trauma)

### Limitations of CRP

While CRP is a valuable marker, it is nonspecific and cannot pinpoint the exact cause of inflammation. Elevated CRP levels must be interpreted in conjunction with clinical findings and other diagnostic tests. False positives can occur, and certain conditions (e.g., liver disease) can affect CRP production.

### Understanding Inflammation Biomarkers: A Focus on Interleukins and TNF-Alpha (Cytokines)

Inflammation is an essential biological response to injury or infection, acting as a defense mechanism that initiates the healing process. However, chronic inflammation can lead to various diseases, including autoimmune disorders, cardiovascular diseases, and cancers. Biomarkers of inflammation play a crucial role in diagnosing, monitoring, and understanding the underlying mechanisms of these diseases.

### The Role of Biomarkers in Inflammation

Biomarkers are measurable indicators of biological states or conditions. In the context of inflammation, biomarkers help identify the presence, intensity, and progression of inflammatory responses. They can be proteins, genes, or other molecules that signal changes in the body's normal processes. Understanding these biomarkers is vital for developing targeted therapies and improving patient outcomes.

### Interleukins: Key Players in the Immune Response

Interleukins (ILs) are a group of cytokines that play diverse roles in the immune system, particularly in mediating and regulating inflammatory responses. Here, we'll focus on some of the most important interleukins involved in inflammation.

#### Interleukin-1 (IL-1)

**Function:** IL-1 is a potent pro-inflammatory cytokine produced by activated macrophages. It promotes the expression of adhesion molecules on endothelial cells, facilitating leukocyte migration to sites of infection or injury. IL-1 also stimulates the production of other cytokines, amplifying the inflammatory response.

**Clinical Relevance:** Elevated levels of IL-1 are associated with various inflammatory diseases, including rheumatoid arthritis, inflammatory bowel disease, and sepsis. IL-1 inhibitors, such as anakinra, have been developed to treat these conditions.

#### Interleukin-6 (IL-6)

**Function:** IL-6 is a multifunctional cytokine secreted by T-cells, macrophages, and endothelial cells. It has both pro-inflammatory and anti-inflammatory properties. IL-6 promotes the differentiation of B-cells into antibody-producing cells and stimulates the production of acute-phase proteins in the liver.

**Clinical Relevance:** IL-6 is a key biomarker in chronic inflammatory diseases like rheumatoid arthritis, where its levels correlate with disease severity. Tocilizumab, an IL-6 receptor antagonist, is used to treat rheumatoid arthritis and other inflammatory conditions.

### Interleukin-10 (IL-10)

**Function:** Unlike IL-1 and IL-6, IL-10 is an anti-inflammatory cytokine produced by monocytes, T-cells, and B-cells. It inhibits the synthesis of pro-inflammatory cytokines and downregulates the expression of major histocompatibility complex (MHC) class II antigens on macrophages.

**Clinical Relevance:** IL-10 plays a crucial role in limiting excessive inflammatory responses and preventing tissue damage. Its therapeutic potential is being explored in conditions like Crohn's disease and psoriasis.

### TNF-Alpha: A Central Mediator of Inflammation

Tumor Necrosis Factor-alpha (TNF-alpha) is another pivotal cytokine in the inflammation cascade.

#### Function

TNF-alpha is produced primarily by activated macrophages and T-cells. It exerts various effects, including the promotion of inflammation, apoptosis, and the activation of other inflammatory cells. TNF-alpha binds to its receptors, TNFR1 and TNFR2, triggering signaling pathways that lead to the production of other pro-inflammatory cytokines, chemokines, and adhesion molecules.

#### Clinical Relevance

Elevated TNF-alpha levels are implicated in numerous inflammatory and autoimmune diseases such as rheumatoid arthritis, ankylosing spondylitis, and psoriasis. Anti-TNF therapies, including infliximab, adalimumab, and etanercept, have proven effective in managing these conditions by neutralizing TNF-alpha activity.

### The Interplay Between Interleukins and TNF-Alpha

The inflammatory response is a complex network of interactions between various cytokines, including interleukins and TNF-alpha. These biomolecules often work in concert to initiate, amplify, and resolve inflammation. For instance, TNF-alpha can induce the production of IL-1 and IL-6, creating a feedback loop that perpetuates the inflammatory response. Understanding these interactions is crucial for developing effective therapeutic strategies.

Biomarkers of inflammation, particularly interleukins and TNF-alpha, are indispensable tools for medical professionals in diagnosing, monitoring, and treating inflammatory diseases - but are additionally

important for the skincare enthusiast to understand! As research continues to unveil the complexities of the inflammation cascade, the future holds promise for more targeted and effective therapies.

## Prostaglandins: Lipid Compounds Involved in the Inflammation Response

Prostaglandins are a group of physiologically active lipid compounds that play a crucial role in a variety of bodily functions, including the regulation of inflammation. For skincare enthusiasts, understanding prostaglandins and their role in inflammatory responses is vital for comprehending broader aspects of human physiology - which play a major role in the health of the skin and anti-aging.

### What Are Prostaglandins?

Prostaglandins belong to a larger group of compounds known as eicosanoids, which are derived from fatty acids. Specifically, prostaglandins are synthesized from arachidonic acid, a 20-carbon polyunsaturated fatty acid. They are produced by virtually all nucleated cells in the body and exert their effects locally, rather than being transported through the bloodstream like hormones.

### Structure and Synthesis

The synthesis of prostaglandins involves several steps:

1. **Release of Arachidonic Acid:** This fatty acid is released from the cell membrane phospholipids by the enzyme phospholipase A<sub>2</sub>.
2. **Cyclooxygenase Pathway:** Arachidonic acid is then converted to prostaglandin H<sub>2</sub> (PGH<sub>2</sub>) by the action of cyclooxygenase enzymes (COX-1 and COX-2).
3. **Specific Prostanoid Synthases:** PGH<sub>2</sub> is further processed by specific synthases to produce various prostaglandins, such as PGD<sub>2</sub>, PGE<sub>2</sub>, PGF<sub>2</sub>α, PGI<sub>2</sub> (prostacyclin), and thromboxane A<sub>2</sub> (TXA<sub>2</sub>).

### Role in Inflammatory Response

Prostaglandins are key mediators of the inflammatory response. They contribute to the classic signs of inflammation: redness, heat, swelling, and pain. Their specific roles include:

#### Redness and Heat

Prostaglandins, particularly PGE<sub>2</sub> and PGI<sub>2</sub>, promote vasodilation, increasing blood flow to the affected area. This contributes to the redness and warmth commonly associated with inflammation.

#### Swelling

Prostaglandins increase the permeability of blood vessels, allowing proteins and fluids to leak into the tissues. This results in the swelling (edema) seen during inflammation.

#### Pain

PGE2 sensitizes nerve endings to the effects of other pain mediators like bradykinin and histamine. This sensitization lowers the threshold for pain, making the affected area more sensitive to stimuli.

## Fever

PGE2 acts on the hypothalamus to raise the body's temperature set-point, resulting in fever. This process helps the body fight off infections by creating an environment less favorable for pathogens.

Prostaglandins are indispensable mediators in the inflammation response, playing roles in vasodilation, increased vascular permeability, pain sensation, and fever. For skincare practitioners, understanding the synthesis, function, and clinical implications of prostaglandins provides a foundational knowledge that is critical for treating inflammatory conditions.

## Effects of Chronic Inflammation on Skin

Chronic inflammation is more than just a buzzword in the world of skin health; it's a crucial factor that impacts skin health in numerous ways. For skincare enthusiasts, understanding how chronic inflammation affects the skin can enhance one's knowledge and help you make informed decisions about skincare routines and consultations.

Chronic inflammation can disrupt skin homeostasis, leading to:

1. **Acne Breakouts:** Inflammatory markers can increase sebum production and follicular blockage.
2. **Eczema and Psoriasis:** Conditions are worsened by inflammatory cytokines.
3. **Aging:** Inflammation accelerates skin aging by breaking down collagen and elastin fibers.

Chronic inflammation disrupts the skin's homeostasis, often leading to acne breakouts. Inflammatory markers can increase sebum production, leading to the blockage of hair follicles. This results in those pesky comedones and cysts that many struggle with. Conditions like eczema and psoriasis are significantly worsened by inflammatory cytokines. These cytokines are small proteins released by cells that have a specific effect on the interactions and communications between cells. When these proteins are out of balance, they can exacerbate skin conditions, making them difficult to manage. One of the most concerning effects of chronic inflammation is its role in accelerating skin aging. Inflammation breaks down collagen and elastin fibers, which are essential for maintaining the skin's firmness and elasticity. Over time, this leads to wrinkles, sagging skin, and other signs of premature aging.

The skincare practitioner must assist their clients in understanding the strict connection between internal inflammation and chronic inflammation on the skin. Skincare consultations, therefore, can be paired with professional recommendations to colleagues that can run diagnostic testing to verify the underlying conditions that are causing the skin conditions. By NOT addressing internal inflammation as a priority in the skin health consultation, the practitioner is missing the key root problem and ultimately, missing the mark all together!

## Anti-Inflammatory Foods

The skincare practitioner, putting together their amazing Care Plans, must consider the most important component of their education practice - which is the incorporation of anti-inflammatory foods as a



baseline to their consultations! Imagine this - clients have a thirty minute Skin Health Consultation designed with their needs in mind prepared for them at their first session with the practitioner and every fourth session with the practitioner for check-ins. During the Skin Health Consultation, the skincare practitioner goes through the treatment plan, homecare recommendations from an ingredient focus and skincare conditions in mind - as well as a list of what to ADD to the client's nutrition schedule (not taking away), such as anti-inflammatory foods as part of their regular lifestyle routine. Genius!

As many skincare conditions are truly a combination of internal inflammatory factors, it is imperative to incorporate the very best foods into one's daily routine in a methodical (almost ritualistic) process, in order to increase cellular homeostasis and regulate the gut microbiome for long-term wellness!

To combat inflammation and promote youthful skin, consider incorporating the following TOP ANTI-INFLAMMATORY FOODS FOR RADIANT SKIN into one's daily nutrition routine:

### 1. Fatty Fish

Fatty fish like salmon, mackerel, and sardines are rich in omega-3 fatty acids, which have powerful anti-inflammatory properties. Omega-3s not only help reduce redness and swelling but also keep the skin hydrated from the inside-out!

### 2. Leafy Greens

Greens such as spinach, kale, and Swiss chard are packed with antioxidants and essential vitamins. These leafy vegetables help to neutralize free radicals, reduce inflammation, and provide your skin with nutrients that promote repair and rejuvenation.

### 3. Berries

Berries like blueberries, strawberries, and raspberries are loaded with antioxidants, particularly vitamin C. These fruits fight inflammation and protect your skin from oxidative stress, which can lead to aging and damage.

### 4. Nuts and Seeds

Almonds, walnuts, chia seeds, and flaxseeds are excellent sources of healthy fats and antioxidants. They help to reduce inflammation and support the skin's barrier function, keeping it moisturized and protected.

### 5. Green Tea

Green tea is rich in polyphenols, particularly catechins, which have potent anti-inflammatory and antioxidant effects. Drinking green tea can help reduce skin redness and inflammation while protecting your skin from UV damage.

### 6. Turmeric

Turmeric contains curcumin, a compound with strong anti-inflammatory properties. Adding turmeric to one's daily nutritional intake can help reduce inflammation and promote even skin tone.

#### 7. Avocado

Avocados are packed with healthy fats, vitamins E and C, which are crucial for maintaining skin health. These nutrients help to hydrate the skin, reduce inflammation, and protect against oxidative damage.

#### 8. Tomatoes

Tomatoes are rich in lycopene, an antioxidant that fights inflammation and protects against sun damage. Lycopene also improves skin texture and tone, providing a radiant complexion.

#### 9. Garlic

Garlic has anti-inflammatory and antimicrobial properties, making it beneficial for fighting acne and other inflammatory skin conditions. Adding garlic to your meals can help keep your skin clear and healthy.

#### 10. Dark Chocolate

Yes, you read that right! Dark chocolate with at least 70% cocoa content is full of antioxidants that help reduce inflammation. Just remember to enjoy it in moderation.

### THE SKIN SAVIOR: BENEFITS OF OLIVE OIL

Another STAPLE to any skincare enthusiast's nutrition routine MUST consist of olive oil! Olive oil has been a staple in the Mediterranean diet for centuries, but did you know it also offers numerous benefits for skin health? At its core, olive oil is rich in monounsaturated fats, particularly oleic acid, which boasts anti-inflammatory properties and benefits heart health. It's also packed with antioxidants, vitamins, and other bioactive compounds that contribute to overall wellness.

#### Top Health Benefits of Olive Oil

##### 1. Heart Health

One of the most well-documented benefits of olive oil is its positive impact on heart health. Studies have shown that regular consumption of olive oil can:

- **Reduce Bad Cholesterol (LDL):** Olive oil helps lower LDL cholesterol levels, which can reduce the risk of heart disease.
- **Increase Good Cholesterol (HDL):** It also boosts HDL cholesterol, which helps remove LDL cholesterol from your arteries.
- **Lower Blood Pressure:** Olive oil has been found to lower blood pressure, further reducing the risk of cardiovascular diseases.

##### 2. Anti-inflammatory Properties

Chronic inflammation is a key driver of many diseases, including heart disease, cancer, metabolic syndrome, and arthritis. Olive oil's high content of oleic acid and antioxidants, such as oleocanthal, provide anti-inflammatory effects comparable to over-the-counter medications like ibuprofen.

### 3. Rich in Antioxidants

Olive oil is loaded with powerful antioxidants that can protect your body from oxidative stress, which is a major contributor to aging and many diseases. These antioxidants also have anti-inflammatory effects and can help fight off chronic diseases.

### 4. Improves Digestion

Olive oil aids in digestion by stimulating the production of bile and pancreatic enzymes. It also helps relieve constipation by softening the stool, making it easier to pass.

### 5. Supports Brain Health

The monounsaturated fats in olive oil are beneficial for brain health. They help maintain the structure and function of brain cells. Some studies suggest that olive oil can help prevent cognitive decline and reduce the risk of Alzheimer's disease.

### 6. Weight Management

Contrary to the belief that all fats are bad, the healthy fats in olive oil can actually help with weight management. They keep you feeling satiated for longer, reducing overall calorie intake. Additionally, olive oil can boost metabolism, aiding in weight loss.

### Incorporating Olive Oil into the Daily Nutrition Routine

For those looking to reap the benefits of olive oil, here are some easy ways to incorporate it into your daily routine:

- **Salad Dressings:** Use extra virgin olive oil as a base for salad dressings.
- **Cooking:** Olive oil is perfect for sautéing vegetables, grilling (lean) meats, or even frying.
- **Drizzling:** Drizzle it over cooked dishes like pasta, fish, or roasted vegetables for an added burst of flavor.
- **Baking:** Substitute butter with olive oil in baking recipes for a healthier alternative.

Incorporating olive oil into your daily nutrition routine is a simple yet effective way to enhance overall health - and the health of your skin! Its array of benefits, from improving heart health to supporting brain function, makes it a must-have for health and skincare enthusiasts.

### Courtney's Favorite Salad

Handful of Salad Greens of Choice

Beets

Olive Oil

Pear  
Walnuts  
Balsamic Vinegar  
Drizzle of Honey  
Fresh Black Pepper  
Salmon (Cooked medium well with lemon squeeze)

#### Courtney's Favorite Dessert

Half a Coffee-Cup Size of Oatmeal  
Dark Chocolate Chunks  
Sliced Banana  
Honey

#### Courtney's Anti-Aging Smoothie

Splash of Water + Ice  
Almond Milk  
Spinach  
1 Avocado  
Flaxseeds  
Blueberries  
Raspberries  
Honey

### Unlocking the Secrets of Microbiome Health

Our gut is often called the "second brain" for good reason. Within this complex system resides the microbiome—a bustling community of trillions of bacteria and other microorganisms. This hidden world plays a crucial role in our overall health and well-being, influencing everything from digestion to immunity. If you're a skincare enthusiast eager to optimize your body's systems, understanding microbiome health is essential.

#### What is the Microbiome?

The term "microbiome" refers to the collective genome of all the microorganisms living in our digestive tract. These include:

- Bacteria: The most abundant and diverse group.
- Viruses: Some of which may help control bacterial populations.
- Fungi: Often involved in breaking down complex carbohydrates.
- Protozoa and Archaea: Less common but still vital players.

This ecosystem is incredibly dynamic, with each type of microorganism playing a unique role in maintaining our health. A balanced microbiome aids in breaking down food, allowing the body to absorb nutrients more efficiently. Beneficial bacteria like *Lactobacillus* and *Bifidobacterium* help ferment dietary fibers, producing short-chain fatty acids beneficial for gut health.

Fermented foods have been around for centuries, celebrated for their unique flavors and impressive health benefits. Packed with probiotics, vitamins, and enzymes, these culinary delights not only tantalize your taste buds but also promote gut health and overall well-being. Here's a list of the best fermented foods you should try:

Kefir is a tangy, fermented milk drink that's often likened to a drinkable yogurt. Rich in probiotics, kefir aids digestion and boosts immune function. It's typically made by adding kefir grains—a combination of bacteria and yeast—to milk. The result is a creamy, slightly effervescent drink that can be enjoyed on its own or added to smoothies.

#### Health Benefits

- Improves gut health
- Strengthens the immune system
- Enhances bone health due to its high calcium content

A staple in Korean cuisine, kimchi is a spicy fermented vegetable dish, usually made with napa cabbage and radishes. It's seasoned with chili powder, garlic, ginger, and fish sauce. Kimchi is lauded for its robust flavor and its array of health benefits, including improved digestion and anti-inflammatory properties.

#### Health Benefits

- Rich in antioxidants
- Supports healthy digestion
- May have anti-cancer properties

Sauerkraut, or fermented cabbage, is another probiotic-rich food that's easy to include in your diet. Originating from Germany, this tangy delight is made by fermenting finely cut raw cabbage in its own juice. It's a fantastic side dish or condiment that pairs well with almost any meal.

#### Health Benefits

- High in fiber and vitamins C and K
- Boosts digestive health
- Supports heart health

Miso is a traditional Japanese seasoning made by fermenting soybeans with salt and koji (a type of fungus). This paste is commonly used to make miso soup, a nourishing dish that's perfect for any time of the day. Miso is incredibly versatile and can be used in marinades, dressings, and even desserts.

#### Health Benefits

- Rich in essential minerals
- Contains beneficial bacteria for gut health
- May reduce the risk of certain cancers

Tempeh is a fermented soybean product originating from Indonesia. Unlike tofu, tempeh retains the whole bean, giving it a hearty texture and nutty flavor. It's a fantastic source of protein and is often used as a meat substitute in vegetarian and vegan dishes.

#### Health Benefits

- High in protein and vitamins
- Promotes bone health
- Supports muscle recovery and growth

Kombucha is a fermented tea beverage that has gained immense popularity in recent years. Made by fermenting sweetened tea with a symbiotic culture of bacteria and yeast (SCOBY), this fizzy drink is not only refreshing but also packed with probiotics.

#### Health Benefits

- Aids in digestion
- Detoxifies the body
- Supports immune function

Around 70% of the immune system is housed in the gut. A healthy microbiome helps to regulate immune responses, protecting against pathogens while preventing overactive immune reactions that can lead to autoimmune diseases. Emerging research points to a profound connection between gut health and mental health. The gut-brain axis involves complex signaling pathways between the gut microbiota and the brain. A healthy microbiome can influence mood, stress levels, and even cognitive functions.

Research has shown that a healthy microbiome is intricately linked to increased longevity. The human gut microbiome, composed of trillions of microorganisms, plays a crucial role in various bodily functions, including digestion, immune system regulation, and even mental health. Maintaining a diverse and balanced microbiome can help reduce inflammation, enhance metabolism, and improve the body's ability to fight off infections. Furthermore, certain beneficial microbial strains have been associated with the production of compounds that protect against age-related diseases such as cardiovascular disease and neurodegenerative disorders. Consequently, diets rich in fiber, probiotics, and prebiotics can positively impact microbiome health, thereby contributing to greater overall well-being and longevity.

In recent years, there has been a growing interest in the potential of probiotics and prebiotics as dietary supplements to support a healthy microbiome. Probiotics are live microorganisms that, when consumed in adequate amounts, can provide health benefits by restoring or maintaining a balanced gut microbiota. On the other hand, prebiotics are non-digestible fibers that serve as food for beneficial bacteria in the gut, helping them thrive and multiply.

Numerous studies have shown that the regular consumption of probiotics and prebiotics can improve digestive health and strengthen the immune system. This is particularly important for older adults who may have a weaker immune system and are more susceptible to infections. Additionally, probiotics and prebiotics have been found to alleviate symptoms of certain digestive disorders such as irritable bowel syndrome (IBS), inflammatory bowel disease (IBD), and lactose intolerance.

Moreover, some evidence suggests that the use of probiotics may also have positive effects on mental health. The gut microbiome has been referred to as the "second brain" due to its close connection with the central nervous system. Emerging research indicates that an imbalance in the gut microbiota may contribute to conditions such as anxiety, depression, and even autism spectrum disorder. Probiotics have been shown to influence the production of neurotransmitters and reduce inflammation in the brain, potentially improving mental well-being.

Despite their potential benefits, it is important to note that not all probiotics and prebiotics are created equal. Different strains of bacteria may have varying effects on the human body, and more research is needed to fully understand their mechanisms of action. Additionally, supplements may interact with other medications or medical conditions, so it is always advisable to consult a healthcare professional before adding them to your diet. Maintaining a healthy microbiome through dietary interventions such as consuming probiotics and prebiotics may have a significant impact on longevity and overall well-being.

#### Courtney's Take on Animal Protein as a Skincare Practitioner

After consuming all of the information above on antioxidant support, internal biomarkers that we actually need to be paying attention to, and education on the microbiome, it's important to note that after a full daily intake of fruits, vegetables, and health fats, we need to discuss animal protein and some hard facts on how to consume this safely for long-term health benefits and of course, glowing skin!

Consuming high amounts of red meat has been associated with several health problems. Studies have indicated an increased risk of cardiovascular diseases, such as heart attacks and strokes, linked to the saturated fats and cholesterol present in red meat. Additionally, a high intake of red meat has been correlated with an elevated risk of certain cancers, including colorectal cancer. The presence of harmful compounds formed during high-temperature cooking, such as grilling or barbecuing, can also contribute to these health issues. Furthermore, excessive consumption of red meat may lead to conditions like type 2 diabetes and certain digestive disorders due to its high fat and protein content. To mitigate these risks, it is recommended to limit red meat intake and adopt a balanced diet rich in fruits, vegetables, whole grains, and *lean proteins*. Additionally, incorporating alternative protein sources like legumes, nuts, and fish can provide the body with essential nutrients while reducing the intake of red meat.

Red meat consumption has also been linked to negative effects on the environment. The production of red meat requires a large amount of resources, including water and land, contributing to deforestation and water scarcity. Moreover, livestock farming is a major source of greenhouse gas emissions such as methane and nitrous oxide, which have significant impacts on climate change. Reducing our reliance on red meat and incorporating more plant-based foods into our diets can help reduce these environmental impacts.

Lean animal proteins such as wild caught salmon, on the other hand are a massive nutritional powerhouse, providing a multitude of health benefits that make it a valuable addition to any diet. Rich in omega-3 fatty acids, wild caught salmon supports heart health by reducing inflammation and decreasing the risk of cardiovascular diseases. It is also an excellent source of high-quality protein, essential for muscle growth and repair. Additionally, wild caught salmon is packed with important vitamins and minerals, such as vitamin D, vitamin B12, and selenium, which play critical roles in maintaining bone health, boosting the immune system, and ensuring proper thyroid function. Furthermore, it has been

found to contain lower levels of contaminants compared to farmed salmon, making it a healthier and safer choice.

Aside from its impressive nutritional profile, wild caught salmon is also a delicious and versatile ingredient that can be incorporated into various dishes. Its meaty texture and rich flavor make it a popular choice for grilling, broiling, or baking. It can also be used in salads, sandwiches, and even tacos for a healthy twist on traditional recipes. With its delicate yet robust taste, wild caught salmon adds depth and complexity to any meal. In addition to being a nutritious and tasty food option, choosing wild caught salmon supports sustainable fishing practices. Unlike farmed salmon which are raised in crowded pens with high levels of antibiotics and pesticides, wild caught salmon are harvested from their natural habitat using sustainable methods that do not harm the environment. By choosing to consume wild caught salmon, you are not only benefiting your health but also supporting responsible and ethical fishing practices.

When it comes to choosing animal proteins wisely, it's essential to consider both nutritional content and environmental impact. Opting for lean meats such as chicken or turkey can provide high-quality protein with less saturated fat compared to red meats. Moreover, incorporating fish, especially those rich in omega-3 fatty acids like salmon and mackerel, can support heart health. It's also important to be mindful of the sourcing of these proteins; choosing products from sustainable and humane farming practices not only benefits personal health but also supports ecological balance. Diversifying protein sources by including eggs and low-fat dairy can further enhance a balanced diet while promoting overall well-being.

Some other important considerations when it comes to choosing animal proteins include the presence of antibiotics and hormones in meat products. It is advised to opt for organic, grass-fed, and free-range options whenever possible to limit exposure to these potentially harmful chemicals.

Additionally, considering the carbon footprint of different protein sources can also play a role in making a sustainable choice. Plant-based proteins such as beans, lentils, and tofu have a significantly lower carbon footprint compared to animal proteins like beef or lamb. Incorporating more plant-based protein options into our diets not only reduces environmental impact but can also provide numerous health benefits such as lower cholesterol levels and reduced risk of chronic diseases.

Selecting animal proteins that align with personal nutritional needs while also considering environmental impact is key. This may involve incorporating a variety of protein sources into our diets, including lean meats, fish, eggs, dairy, and plant-based options. Being mindful of sourcing, potential exposure to harmful chemicals, and individual dietary restrictions can help make informed decisions that promote both personal and planetary health.

The key to ultimate skin health (inclusive of multiple things discussed in this book) includes the removal of toxins from the body and ensuring the gut microbiome is taken care of at its most optimal state. When the microbiome is taken care of, inflammation is reduced. When inflammation is reduced, individuals can live a longer, happier life - with gorgeous, glowing skin as a nice addition! Skincare can never be the only focus. It truly needs to be the overall focus of the health and wellbeing of the body that is of interest - in which healthy skin will then be revealed!