

The Role of pH

An important balance for health and effective skin care

Lawrence Samuels

Within our body and skin lives a delicate balance between acid and alkali, otherwise known as our pH. A pH number indicates the acidity or alkalinity of a specific solution. The body and skin are very sensitive to their pH levels and have complex systems that work to maintain an acidic pH for the skin and an alkaline pH for the body.

Because the metabolic function of every cell in the body is affected by pH, our survival depends on the body's ability to maintain the correct pH balance (homeostasis). Outside a healthy pH range, the skin loses its ability to protect the body from environmental damage. Enzymes, and even organ systems, lose their ability to function. The pH factor

Balance

Normal skin pH is somewhat acidic, in the range of 4.5, plus or minus 1.0. It can be different from one part of the body to another, and can also vary due to age, health, and gender, and a person suffering from a skin disease can have a pH above 6. In contrast, the body's internal pH needs to stay in the range of 7.35 to 7.45 for cells to function properly. The proteins in the skin and body are affected by the tiniest changes in pH.

On a daily basis, there are three main forces at work that can influence the pH of the skin and body: Environmental injuries to the skin; the effects of

"Feeling gratitude and not expressing it is like wrapping a present and not giving it."

- W. A. Ward

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Skin pH can vary due to age, health, and gender.

affects circulation, breathing, kidney function, liver function, digestion, hormone function, immune system function, and the skin's hydration control and barrier function. The pH equation for health, therefore, is the perfect balance between the body's internal pH and the skin's external pH.

ingested food and liquids; and the waste products produced by the metabolic activity of the cells.

Fortunately, the skin and body have mechanisms to prevent these forces from shifting pH outside of normal ranges. These include chemical

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buffering systems, the elimination of carbon dioxide, and urinary excretion.

Chemical Buffering

To guard against sudden shifts in pH, the body uses its naturally occurring antioxidants, enzymes, weak acids, and weak bases to minimize changes.

Carbon Dioxide Elimination

Carbon dioxide is mildly acidic. As it accumulates in the blood, the pH of the blood decreases (acidosis). Elimination of carbon dioxide occurs in the lungs through normal exhaling; the brain regulates the amount of carbon dioxide that is exhaled by controlling the speed and depth of breathing. Thus, an accumulation of carbon dioxide in the blood makes us feel the need to breathe faster and deeper, eliminating the carbon dioxide faster and returning the pH of the blood to a normal range.

Urinary Excretion

The body's pH is further controlled by the urinary excretion of acids and bases. The kidneys make these adjustments much slower than the lungs, and generally take several days.

The Acid Mantle Layer

There also are specific mechanisms within the skin to keep its pH at the optimum level. The skin's pH is regulated by its secretions. The pores of the skin are made up of a combination of oil and sweat glands (sebaceous and sudoriferous glands) that help to keep the skin healthy and elastic. Their constant secretions form what is called the acid mantle layer, a combination of sebum (oily fats), proteins, and perspiration that covers the skin's surface.

Besides its role as barrier and filter, the skin is involved in the immune system, temperature regulation, sensation, storage of chemical compounds, elimination of toxins created by cell metabolism, synthesis of molecules, and determination of physical characteristics. Having the correct pH in the skin is critical for these functions to continue unhindered.

Age-Related Changes

In addition to the many environmental influences that can change the skin, age is one pH-changing factor we'll all

experience. At puberty, when the body starts to produce more hair, the sebaceous glands associated with hair follicles become more active, as do the hormones that control sweating. Both lead to changes in the skin's pH.

In our late teens to early 20s, the acid mantle is well developed and provides good protection against potentially harmful environmental factors.

With increasing age, the skin's pH becomes more neutral. This reduced acidity leaves the skin more susceptible to bacterial growth and infections. The skin weakens as a result and begins developing problems as the efficiency of the pH-regulating system decreases.

The aging process of the skin causes biochemical changes in collagen and elastin. (Collagen gives the skin its firmness, and elastin gives it elasticity.) The rate of loss of skin firmness and elasticity depends on genetics, health, sun exposure, skin care regimen, and other factors.

As the skin becomes less elastic, it also becomes drier. The underlying fatty

tissue begins to disappear, resulting in the skin beginning to sag and wrinkle. At this stage, the skin is more easily injured, heals more slowly, and tends to dry out more quickly.

Ask your skin care therapist about what you can do to maintain your pH and stave off the effects of environment and age.

Lawrence Samuels, MD, a dermatologist for more than 30 years, is chief of dermatology at St. Luke's Hospital in St. Louis, Missouri. He provides instruction in dermatology at Washington University Medical School, in addition to seeing patients on a daily basis.



Ask your skin care professional how to help balance your pH.

Stop Biting Your Nails

Breaking a nail is one thing. Breaking a nail-biting habit is another. According to the American Academy of Dermatology, nail biting typically begins in childhood and can continue through adulthood, and the side effects can be more than cosmetic.

HOW TO STOP BITING YOUR NAILS:

"Chronic nail biting can cause serious problems," says board-certified dermatologist Margaret E. Parsons, MD, FAAD, associate clinical professor of dermatology at the University of California, Davis. "Repeated nail biting can damage the tissue that makes nails grow, resulting in abnormal-looking nails. It can also leave you vulnerable to infection as you pass harmful bacteria and viruses from your mouth to your fingers and from your nails to your face and mouth."

To help nail-biters kick the habit, Parsons recommends these tips:

(1) Keep nails trimmed short: Having less nail provides less to bite and is less

tempting. (2) Apply bitter-tasting nail polish to your nails: This safe but awful-tasting formula discourages nail biting. (3) Get regular manicures: Spending money to keep your nails looking attractive may make you less likely to bite them. Alternatively, cover your nails with tape or stickers or wear gloves to prevent biting. (4) Replace nail biting with a good habit: When you feel like biting your nails, try playing with a stress ball instead to keep your hands busy and away from your mouth. (5) Identify your triggers: These could be physical triggers, such as the presence of hangnails, or other triggers, like boredom, stress, or anxiety. By figuring out what causes you to bite your nails, you can figure out how to avoid these situations. (6) Try to gradually stop biting your nails: Some doctors recommend taking a gradual approach to break the habit. Try to stop biting one set of nails, such as your thumbnails, first. When that's successful, move on to the next.

"For some people, nail biting may be a

sign of a more serious psychological or emotional problem," Parsons says. "If you've repeatedly tried to quit and the problem persists, consult a doctor."



Nail biting can lead to a host of problems.

Don't Get Sick!

Prevention is Key

Leslie Roste

Regardless of whether the threat is a simple cold or the flu, there are several things you can do to protect yourself from unnecessary downtime.

PROPER HAND WASHING

This gets top billing because of its true effectiveness in preventing illness. The most important aspects of hand washing are the length of time (at least 30 seconds) and the amount of friction you use, not the water temperature.

FLUIDS AND MORE FLUIDS

Staying well hydrated clearly benefits our skin, the largest organ of our immune system. The advice to stay adequately hydrated is even more important in the cold, dry months of winter.

EAT YOUR VITAMINS

A balanced diet, which includes all food groups, gives your immune system the resources it needs when it faces a challenge like the flu.

EIGHT HOURS OF SLEEP

Research continues to prove how vital this is to every part of our well-being. It

affects everything from our ability to resist illness to managing weight.

HANDS AND FACE

It is important to keep your hands away from your face, particularly the eyes, mouth, and nose, which are favorite points of entry for viruses. Start paying attention to how frequently you touch your face. Break the habit, and you could reduce your risk of colds and flu this season by more than 50 percent.

Leslie Roste has degrees in nursing and microbiology and is employed by King Research in Milwaukee, Wisconsin.

*"Acknowledging
the good that
you already have
in your life is the
foundation for
all abundance."*

-Eckhart Tolle

Hey there Leading Lady! I hope you have enjoyed this month's issue of the Leading Lady Newsletter. I have am grateful that you've invested a couple of minutes in yourself to read through the articles. Have a productive and fulfilling month!

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