LifeWave Skin Care Patch Instructions

By: Steve Haltiwanger, M.D., C.C.N.

LifeWave's new glutathione skin patches have been designed to increase the body's production of glutathione by sending information signals not chemicals into the body. This is a completely new type of cosmetic technology that has never been available before. LifeWave skin care patch now offers the opportunity to improve the health of the skin from the inside out.

How to use the skin patches

For best results use 3 times a week, use every other day. Apply the patch 2 inches below the belly button or on the lower portion of the sternum. Apply the patch to clean, dry skin in the AM. Patches can be worn for up to 12 – 14 hours before discarding. Remove immediately if you feel discomfort or skin irritation occurs. Do not reuse patches once removed from the skin. Do not use more than one patch at a time on the body.

It is recommended that the skin patch not be worn during sleep. This is because in the early days of use some people will release toxins so fast that they develop detoxification symptoms. If symptoms of detoxification occur and become too uncomfortable it is important that the wearer recognize this effect and remove the patch. Always drink plenty of water while wearing any LifeWave patch technology. Drinking water is particularly important when wearing the skin patch in order to flush toxins.

The Skin Patches can be worn in conjunction with the Energy Patches and Ice Wave Patches.

Detoxification issues and the LifeWave Skin Care patch

Laboratory studies conducted by LifeWave researchers have shown that blood levels of the antioxidant glutathione rise and the excretion of toxins in the urine increase when the skin patch is worn. Since the LifeWave Skin Care patch is not putting anything into the body other than communication signals, this means that the patch is sending a message that causes the cells to make more glutathione. Increasing the levels of reduced glutathione in the body supports detoxification mechanisms causing the cells to release previously stored toxins.

This is an exciting aspect of the LifeWave technology because the excretion of toxins that have previously accumulated in the body is beneficial. Unfortunately, if too many toxins enter the bloodstream too fast you may transiently experience various symptoms of toxicity, which can range from mild-to-severe fatigue, headaches, sleepiness, diarrhea, post nasal drip, sore throat, minor skin breakouts, joint pain, muscle aches, foggy thinking, poor concentration, nervousness, metallic taste in the mouth and even sweating. These symptoms will typically be short lived, but **can be intense and occur within minutes** of applying the LifeWave Skin Care patch.

If at any time you **begin to feel unwell** while wearing the skin patch take the patch off for at least 4 hours or the rest of the day. Each patch has about twelve hours of effectiveness.

The use of the LifeWave Skin Care patch can initiate detoxification symptoms very rapidly in some high risk individuals (heavy smokers, people exposed to occupational chemicals and toxins like hair dressers, dentists, welders, crop dusters, roofers, painters, etc). It is important to recognize that this is a natural outcome from any approach that increases levels of the antioxidant glutathione.

There are 3 steps that occur with use of LifeWave's glutathione skin patches.
1) During the initial week detoxification of the skin occurs- this is a process where the cells release toxins so that the health of the skin can come out (among other heath benefits).
2) Starting during the first week many individuals report that they start to see improved clarity, smoothness and glow of their skin.
3) Between 3 to 6 weeks the reduction of fine lines and wrinkles are noticed.

Warnings: For external use only. Do not ingest. Do not use on wounds or damaged skin. Ask a health professional before using if pregnant or if you have a health condition. This product is not intended to be used in the treatment, prevention or cure of disease. Use product only as directed. Do not use product if you have a health condition. Please consult your healthcare professional before using should you have any concerns. The adhesive of this product is hypoallergenic; however, if you experience skin irritations simply discontinue use. Should you experience any type of discomfort from the use of this product, discontinue use. Please review all instructions and information about this product before using.

The Role of Glutathione in the Body

By Steve Haltiwanger, M.D., C.C.N.

- The master antioxidant
- Cellular detoxifier
- Supports the health of the skin
- Recycles other antioxidants
- Assists amino acid entry into cells
- Is required for the synthesis of proteins
- Is required for healthy liver detoxification
- Helps maintain energy production

What is glutathione?

Glutathione is a natural water-soluble cellular antioxidant. An antioxidant, which is also known as a free-radical scavenger, is a molecule that is easily able to donate electrons to another electron-deficient molecule. Glutathione is a tripeptide antioxidant composed of three amino acids cysteine, glutamic acid, and glycine. When combined together in this form, these amino acids provide the cells with an essential compound that is a critical part of the body's natural defense system (Lomaestro et al., 1995). Glutathione is an important cellular antioxidant that protects cells against oxidative stress, and it has a critical role in cellular detoxification. Glutathione is found in two forms in the body. The active (electron-donating) antioxidant form is called reduced glutathione (GSH) and the oxidized (electron-deficient) inactive form is called glutathione disulfide (GSSG) (Stryer, 1988).

Where is glutathione found in the body?

All cells make glutathione, however glutathione is found in high concentrations in the liver, kidneys, skin, lungs, nerve tissue and the lens of the eye where it has critical protective functions in preventing oxidative damage to these tissues. When people try to increase their antioxidant levels they run into problems in increasing their cellular glutathione levels. Cellular levels of antioxidant substances like selenium, vitamin E and vitamin C can be elevated by increased simply by increasing dietary or supplemental intake, but cellular glutathione is only produced in the cells from precursor molecules (Lenton et al., 2000).

Glutathione is an antioxidant that helps control free radicals in the cells

Cells use glutathione to control free radicals (Anderson, 1998). Free radicals are reactive substances that contain one or more unpaired electrons. Free radicals are naturally produced by chemical reactions in the body, by toxins and by radiation to which the body is exposed. Unless these damaging chemicals are neutralized by antioxidants these reactive molecules will steal electrons from cellular molecules creating a chain reaction of destruction. The tissue reactions created by free radicals are now thought to be involved in premature aging, skin wrinkling, cancer, atherosclerosis, arthritis, immune

disorders and other degenerative diseases.

When energy is produced in the mitochondria of cells some of the oxygen is converted to a variety of free radicals such as superoxide (O2-), hydrogen peroxide (H2O2) and hydroxyl (OH-) radicals. Unless adequate amounts of cellular and extracellular antioxidants are available these free radicals will begin to damage cellular structures such as the cell membranes, the mitochondria, the nucleic acids of DNA and cellular proteins, which impairs the ability of the cells to repair themselves and reproduce (Meister, 1995, Fratelli et al., 2005).

When cell membranes are damaged by free radicals their ability to hold an electrical charge (capacitance) and their ability to transport minerals, amino acids, glucose, and other nutrients is disrupted. When mitochondria are damaged the cells ability to make energy is impaired. When the genetic code is damaged, cells cannot reproduce normal cells. Free radicals also cause lipid peroxidation (oxidative stress), which can result in lowering HDL cholesterol and damage to the cell membranes lining blood vessels. When the delicate membranes lining blood vessels are damaged, an inflammatory process may result, which leads to thickening of blood vessels and arterial plaque.

From the perspective of electronic nutrition, adequate availability of antioxidant nutrients and cell membrane factors, which can neutralize and sponge up free radicals are necessary to combat free radical damage. Nutritionally the key players are compounds that act as electron donors.

Glutathione is a cellular detoxifier

Not only is glutathione an antioxidant, but it also is needed to detoxify and remove foreign chemicals from cells, particularly liver cells. Cells use glutathione to form soluble compounds with toxins so that the toxins can then be excreted through the urine or the gut (Lomaestro et al., 1995). If an excessive amount of toxins are present in the tissues the cells' ability to make enough glutathione to control free radicals and remove toxins can be inadequate to the requirements (Jones et al., 1995).

As glutathione levels fall with excessive demand or with increasing age the body's ability to handle free radicals and eliminate dangerous toxins also declines. The end result is increasing oxidative stress, cell damage, organ damage and the accumulation of toxins that are stored both in cells and in the connective tissue matrix around cells.

Glutathione has many functions in the body

Glutathione has other numerous functions in the body. Besides being an antioxidant and a cellular detoxifier glutathione assists in the synthesis of both protein and DNA. It is also involved in the transport of amino acids into cells, in activity of immune cells and in the activity and regulation of some enzymes (Lomaestro et al., 1995; Cotgreave et al., 1998).

What conditions cause the cells to be low in glutathione?

Glutathione levels decline with age and in disease states (Anderson et al., 1998). Low levels have been linked to premature death and accelerated aging. Glutathione levels can

become depleted in the cells of individuals with cancer, chemical and heavy metal toxicity, various nutritional deficiencies, AIDS, other chronic viral infections and autoimmune diseases; therefore the maintenance of adequate levels of glutathione is critical for protection of cells and tissues that are degenerated or inflamed.

Strenuous exercise can also deplete antioxidants in the body

Strenuous and prolonged exercise can deplete antioxidants including glutathione in the body (Ji, 1995). Prolonged or repetitive aerobic activity causes the body to utilize large amounts of oxygen to produce ATP in the mitochondria. Unfortunately, oxygen utilization in the mitochondria also produces significant amounts of oxygen free radicals (Chang et al., 2006). A higher amount of exercise unavoidably produces larger amounts of free-radicals that must be neutralized by the body's antioxidant systems (Banerjee et al., 2003). The body can compensate for strenuous exercise by increasing antioxidant enzyme activity up to a point. However, prolonged, intensive and repetitive bouts of exhaustive exercise can eventually overwhelm the body's antioxidant reserves. When the antioxidant system begins to fail continuous oxidative stress can eventually overwhelm the protective mechanisms leading to impairment in cellular functions such as energy production and impairment of liver detoxification. Clinical research in animals has shown that when strenuous exercise is continued after glutathione depletion has occurred, oxidative damage can be seen in the liver (Leeuwenburgh et al., 1995) and **endurance is significantly decreased** (Sen et al., 1994).

One of the interesting and curious effects reported by a significant number of users of the new LifeWave glutathione patch is that of increased energy and mental clarity. In fact, some individuals had greater energy effects with the skin patch than they did with the LifeWave Energy Enhancer patches. Other individuals reported synergistic effects with enhanced energy effects when they wore both the new glutathione skin patch along with the Energy Enhancer patches. Some of the best results were seen by extreme athletes. These individuals of course would have the greatest oxidative stress.

It is very likely that these individuals have antioxidant systems that are under stress and the increased glutathione produced in their bodies by the patches is able to tilt them back toward improved antioxidant status. In a sense, we could be looking at a **global body antioxidant tune-up** that improves the functions of many diverse biological processes.

It will be interesting to see how all this plays out over time. From the athletic point of view runners, tennis players, basketball players, soccer players, football players and other individuals who are involved in competition sports frequently hit the wall of exhaustion at some point during their season. Recently this phenomenon was well demonstrated by a number of NBA players who were involved in exhaustive seven game playoff series. Repeatedly the announcers would comment how the exhaustive playoffs were taking their toll on a number of star athletes. I strongly suspect that a combination of nutrient and antioxidant imbalances were present in these individuals. Correction of antioxidant status could be of benefit and it is likely that Lifewave's new skin patch will be found to be a useful strategy to address this phenomenon.

Glutathione works in conjunction with other antioxidants in protecting the cells
The body uses dietary antioxidants such as vitamin E, vitamin C, vitamin A and selenium along with a number of internally generated (endogenous) cellular and extracellular enzymatic antioxidants (catalase, superoxide dismutase (SOD) and glutathione) to defend itself against free radicals.

All the cells of the body contain glutathione. In its role as an antioxidant, glutathione is a component of the intracellular antioxidant enzymes glutathione peroxidase and glutathione reductase. In order for these enzymes to protect cells against damage from free radical scavengers, these enzymes require a continuing supply of reduced glutathione as well as adequate cellular concentrations of vitamin E, vitamin C and the mineral selenium. When reduced glutathione neutralizes free radicals, it is converted to an inactive oxidized form. The trace mineral selenium is needed to activate glutathione peroxidase, which recycles cellular glutathione from its oxidized form back to its active reduced form.

Glutathione, vitamin C and vitamin E are intricately connected in the body and physiologically function as a conjoined antioxidant system. Maintaining adequate glutathione in the cells is essential for preserving the physiological antioxidant activity of vitamin C because it is required to convert the oxidized form of vitamin C, which is known as dehydroascorbate back to the active ascorbate form (Martensson et al., 1993). Both glutathione and vitamin C are also involved in converting the oxidized form of vitamin E back to its active reduced form (Meister, 1994).

Recycling Antioxidants
Dr. Lester Packer is a world famous antioxidant researcher who has studied antioxidants and free radical production. Dr. Packer believes that antioxidants interact in a complex recycling process in the body. It was Dr. Packer who first discovered how vitamin E is "recycled" by vitamin C in the body (Packer et al., 1979).

Vitamin E is a lipid-soluble antioxidant that neutralizes free radicals that form in fatty tissues and membranes. Vitamin E first absorbs the excess unpaired electrons from free radical molecules and becomes oxidized in the process becoming a free radical itself, though less reactive than the original free radicals. Vitamin C is now needed to react with the free radical oxidized form of vitamin E converting it back to its natural bioactive form of reduced vitamin E.

The newly regenerated vitamin E molecule has now reacquired antioxidant capability, but this mechanism leaves behind a new free radical in the form of oxidized vitamin C. The recycling process continues with glutathione regenerating reduced vitamin C from oxidized vitamin C. Glutathione, the cell’s primary antioxidant is now oxidized and it is recycled back to its reduced biologically active form by the cellular antioxidant coenzyme NADPH and the selenium dependent enzyme glutathione peroxidase. From this discussion it is apparent that vitamins E, C, selenium and glutathione work in conjunction with each other to deactivate and prevent free radicals from causing

oxidative damage in the body. The limiting factors in this process are the availability of selenium and glutathione.

Enhancement of cellular glutathione levels by nutrition

Cellular glutathione levels decline with age, chemical toxicity, heavy metal toxicity, viral infections and with low dietary intake of the amino acids cysteine, methionine, glutamine and glycine. Ingestion of food or dietary supplements containing the amino acids glutamine and glycine along with the sulfur amino acids cysteine and methionine or the supplement N-acetylcysteine (NAC) can provide substrate material for glutathione synthesis. However, because the amino acid cysteine is relatively toxic in higher amounts, N-acetylcysteine supplements are a preferred alternative choice for supporting the body's natural cellular glutathione production. Other nutrients that support intracellular production of glutathione are selenium, lipoic acid and whey protein (Micke et al., 2001). The point of this section is that the addition of the proper nutrients into the diet can potentially enhance the effect of LifeWave glutathione patches.

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