

Education News



ISSUE 7 | FROM THE NUTRIGOLD NUTRITIONAL UPDATE SERVICE

OPTIMUM NUTRITION IS THE KEY TO HEALTHY VIBRANT SKIN

We all know that true beauty is more than skin deep but healthy vibrant skin is a reflection of our overall health that shouldn't simply be taken for granted.

In an age of filler injections and chemical peels, isn't there a way we can keep our youthful complexion more naturally? Can we feed our body what it needs to keep our skin vibrant and firm?

To achieve a firm, smooth, healthy complexion, we need nutrients that help build and maintain healthy skin tissue and protect it from damage. In recent years there have been a variety of clinical studies looking at nutrients that might help prevent or even reverse signs of skin damage and aging, many with positive results. This is perhaps why so many of us are turning towards a nutritional approach to improving the feel and quality of our skin.

Of course, beauty isn't just skin deep, and we shouldn't feel pressured to look flawless and youthful all of the time. Audrey Hepburn famously refused to have her lines airbrushed out of Johnny Isaac's 1992 photo of her, as she had earned every one of them. Sun damage, pollution, and poor diet or nutritional deficiency can age and wrinkle the skin prematurely, however, and we may wish to look after our skin as we would the rest of our body - so we can feel good about how we look, and look as good as we feel.



WHY DO WE GET WRINKLES?

Wrinkles and fine lines are usually the result of collagen breaking down. 95% of the dermis, or underlying layer of skin, is made of collagen. Collagen fibres and elastin fibres are vital components of our skin, and work together to help to keep it firm, resilient and able to spring back into shape every time we move. Elastin gives it its elasticity, as we can guess from the name, and collagen holds everything in place (the French word "coller" means to stick – and collagen is often referred to as the glue that keeps everything connected).

As we get older, we tend to produce fewer of these proteins, and so the skin loses its integrity. This is when lines, wrinkles and sagging may start to happen, as the skin is unable to maintain the firmness and elasticity of its structure. Gravity becomes the more dominant force, together with the strain of habitual expressions, such as frowning, wrinkling one's brow, squinting and smiling – as in our laughter lines. The collagen and elastin fibres that are still there can get stuck in these patterns, unable to move as freely as before.¹

SUN DAMAGE

In addition, collagen can be damaged by exposure to the sun's ultraviolet rays, which then also cause an excessive production of abnormal elastin. The skin will try to repair itself each time, but tiny layers of scar tissue will build up and create wrinkles². This is known as photoageing, alongside brown spots, changes in pigmentation and surface roughness.

SMOKING

Smoking has also been shown to contribute to photoageing. The reactive oxygen species found in smoke, as well as in pollution, will impair collagen fibres in the same way as UV sunrays³.

THINNING SKIN

Another sign of aging is thinning skin, which is a result of the body producing fewer skin cells as well as fewer collagen fibres. We need a continual supply of specific nutrients, co factors and energy to ensure the continual turnover of skin tissue, and all of these can become diminished as we get older for a variety of reasons.

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DRY SKIN

Many of us complain of dry skin at all ages, and much of the cosmetics market is about hydrating the skin. Creams have been used from time immemorial to help moisturise the skin superficially, often by the humectant effect of drawing moisture either from the air, or if the atmosphere is dry, then from deeper layers of the skin tissue – which really just deepens the dehydration effect. Some lotions also aim to create a barrier to prevent moisture escaping. It has long been debated whether we should rather moisturise from within.

One double-blind placebo controlled trial in the Lake District compared the effect on wrinkle formation of drinking tap water with that of drink mineral water. The subjects of the trial drank 1.5 litres of water daily for eight weeks, and then their skin was measured for various signs of ageing. Women aged 24-43 in both groups showed an improvement, the tap water group showing a 19% and the mineral water group showing a 24% reduction in wrinkles. Subsequent research has questioned the method of this study, although no one doubts that skin needs to be hydrated.

“It has long been debated whether we should rather moisturise from within”



HYALURONIC ACID

A major component of skin is a gel-like fluid called ground substance, and its main ingredient is hyaluronic acid. Hyaluronic acid can hold up to a thousand times its own weight of water, which makes it extremely hydrating to the skin, and also contributes greatly to its elasticity – its ability to bounce back into place rather than sag or distort out of shape.

Well hydrated skin can then also detoxify more readily and receive nourishment more easily, as water is needed to carry all these substances to and from the tissue cells. Hyaluronic acid (HA) is able to perform these functions so well because of its large molecular weight – but this also makes it harder to absorb. So a good oral anti-ageing formula will contain hyaluronic acid in micro form, together with its precursor N-acetyl glucosamine to help your body make its own hyaluronic acid.

N-ACETYL GLUCOSAMINE

N-acetyl glucosamine – or NAG – is the major ingredient in hyaluronic acid, and as such was the focus of a 2001 study of 53 women. A formula that contained NAG alongside amino acids, minerals and antioxidants was given to the women for 5 weeks, and then their skin was compared to a control group. There was a 34% reduction in the number of both visible wrinkles and fine lines in the group of women who took the supplement.⁴

In 2002 scientists devised a double-blind placebo test to see how well N-acetyl glucosamine given orally is converted to hyaluronic acid. They gave N-acetyl glucosamine to a group of women with a tendency towards dry and rough skin for 60 days, and measured the quality of the skin to detect signs that they were producing more HA, and therefore better hydrated and smoother skin. The study showed a significant increase in skin hydration and roughness, and the scientists referred to its “beautification effect” in recommending it as a potential ingredient for a skin formula.⁵

MARINE COLLAGEN

Given that the underlying layer of our skin is 95% collagen, and that wrinkles are usually a result of collagen breaking down, it is no wonder that this has been a keen area of research for anti-ageing

treatment, and oral supplements of hydrolysed collagen have shown impressive results. Some scientists suggest that collagen is best taken orally as the molecules are too large for the skin to absorb.

HOW DOES IT WORK?

Researchers have shown how the hydrolysed collagen, once broken down in the body, attracts fibroblasts which trigger the synthesis of new collagen. Hydrolyzed collagen also increases the diameter and cohesion of collagen fibre in the skin by the same mechanism: fibroblast stimulation. This means increased thickness, suppleness and resilience, as well as hydration – all the things we are looking for to keep skin looking and feeling good. A recent Japanese study of 33 women aged 40-59 given oral hydrolysed collagen daily for 8 weeks showed a 28 percent improvement in skin hydration levels.⁶

A French study of 47 women aged 35-55 demonstrated an increase in skin smoothness and hydration using new state of the art measuring technologies. After 12 weeks of daily hydrolyzed collagen given orally, the researchers announced a 41% reduction in furrowing, as well as significant reduction in deep wrinkles, and a 19% increase in skin suppleness.

A further study of 25 women in their 20s to 50s showed a 76% improvement in suppleness. 60% of the women reported fewer wrinkles, 92% said their skin was free from dryness, 72% said their skin had fewer dark spots and discolourations, and 95% reported a reduction in dark circles under their eyes after 6 weeks.⁷

It is no wonder, then, that Arctic dwellers on a traditional diet are renowned for such amazing skin when marine blubber is so rich in collagen, oils and other helpful nutrients.

VITAMIN C, COPPER AND IRON

Vitamin C, copper and iron together are well documented for their role in collagen formation. These are important co-factors to the more “exciting” ingredients above – we simply cannot make healthy new skin tissue without them.

Vitamin C’s role as an antioxidant has also been shown to protect the skin from sun damage, one of the largest causes of premature aging. A study of 4025 women aged 40-74 reported a less wrinkled appearance and an improvement in dry skin with high levels of vitamin C.⁸

VITAMIN E

Vitamin E is also known to help reduce collagen degradation, and to protect the oily structures in our skin. A 2005 study looked at the antioxidant properties of vitamin C and vitamin E in combination, having seen evidence that the two work synergistically in the body to increase each other’s effect. The study found that vitamin C and vitamin E taken together can protect against sunburn, and so the UV damage that we associate with premature wrinkle formation and other signs of aging.⁹

Another study demonstrated the sun damage protection qualities of Vitamin E given with carotenoids. The researchers monitored the effects of UV exposure on the skin of healthy volunteers taking a vitamin E and carotenoid supplement over 12 weeks, and their reaction the UV light significantly decreased.¹⁰

CAROTENOIDS

Carotenoids are powerful antioxidants that give vegetables some of their most vibrant colours: reds, yellows, oranges and purples. We often hear about beta-carotene from carrots, which is also a precursor to vitamin A, but there are several more, including lutein and zeaxanthin found in green leafy vegetables, and astaxanthin, which gives many seafoods such as salmon, crab and krill their natural reddish pink colour.

“There are now studies that show how taking astaxanthin orally may also protect our skin from sun damage and the visible signs of premature aging”

ASTAXANTHIN

Marine biologists noticing pigment changes in Antarctic krill decided to investigate further. They found that the krill contained a 450% higher astaxanthin concentration during the summer than in the winter, and concluded that this was to protect them from harmful solar radiation.¹¹

There are now studies that show how taking astaxanthin orally may also protect our skin from sun damage and the visible signs of premature aging. One combined astaxanthin with vitamin E, given to a small group of Japanese women with a mean age of 40, and then compared with women who had taken a placebo. The results showed increased moisture levels, a reduction in wrinkles, improved elasticity, as well as fewer spots, freckles and dark circles around the eyes in only 2-4 weeks.¹²



A follow up study of 49 American women with a mean age of 47 tested astaxanthin on its own. A dermatologist's inspection showed a remarkable improvement in wrinkle reduction, hydration, smoothness and elasticity in the treated group. Most notably, the main benefits in elasticity and wrinkles were seen between weeks 3 and 6, which suggests that astaxanthin enhances the process of skin regeneration, which usually takes between 4-5 weeks.¹³

LUTEIN AND ZEAXANTHIN

Lutein is a type of carotenoid that is found in dark green, leafy vegetables including spinach and kale, and as we can see above, seems to assist vitamin E with protection against UV damage. Within the skin, lutein appears to be deposited in the epidermis and dermis, and may protect the skin by absorbing blue-light and quenching free-radicals that may be produced in the skin after exposure to sunlight.

One study showed that 10mg lutein daily increases skin hydration by 28%, elasticity by 8%, and the superficial lipids in skin by 33% - and reduces oxidation of these lipids by 55%.¹⁴

The same study then looked at using lutein combined with zeaxanthin.

Both are carotenoids that provide the yellow pigment in egg yolks and green vegetables. As we so often find with nutrients that work side by side in nature, the researchers found a synergistic effect. Lutein and zeaxanthin together increased skin hydration by 60 percent, skin elasticity by 20 percent and the amount of superficial lipids present in the skin by 50 percent, while decreasing the oxidation of those beneficial lipids by 64 percent.¹⁵

ZINC

Zinc is also well documented for its role in skin health, and also as an anti-inflammatory. We know that zinc deficiency can have a detrimental effect on collagen production¹⁶, and also on roughness of the skin¹⁷. Zinc-rich foods such as seafood and nuts featured among those associated with fewer wrinkles in Melbourne's Monash University study of 453 elderly Greeks, Swedes and Australians¹⁸.



In addition, any formula that provides copper and iron (as co-factors with vitamin C to help the body produce new collagen) would also need to contain a level of zinc, in order to avoid creating an imbalance.

SILICON

Silicon is another major component of the collagen in skin, and is believed to stabilize the network of glycosaminoglycans such as N-acetyl glucosamine in the skin's hyaluronic acid (see above). It is also thought to help form crosslinks in collagen, which improves the strength and elasticity of the skin.

Research suggests, however, that we absorb less silicon from our vegetables, fruit and wholegrains as we age, and that women absorb less than men.¹⁹

One double-blind, placebo-controlled study gave 50 women with sun-damaged skin either 10 mg silicon or a placebo for 20 weeks. Measurements of skin roughness and elasticity showed improvement in the silicon group as compared to the placebo group.

RESVERATROL

Resveratrol is the reason the popular media has now given us permission to drink red wine and eat chocolate. Known as the anti-aging compound after being shown to increase the health and lifespan of mice²⁰, resveratrol has also been shown to protect human skin from UV damage²¹, which we know contributes to wrinkles and other signs of photoageing. It is found in higher levels in red wine (partly due to its long fermentation time), and in much smaller amounts in dark chocolate.

Not all wines will contain sufficient levels of this powerful antioxidant, however. Resveratrol is formed as a response to certain molds growing on the skin of the grape, so red wines from the moister northern climates would usually provide the highest content. In addition, the alcohol in red wine and the theobromine in chocolate are both stimulants and diuretics that can dehydrate and deplete the body, and therefore the skin, of vital nutrients.

Certain wild varieties of blueberry and bilberry have been shown to contain small amounts of resveratrol, but again, the conditions they are grown in would be important to ensure the correct molds are present.²² Commercially grown berries are unlikely to contain much, if any. Resveratrol supplements are therefore often the first choice for those wanting to reap its potential benefits.



GRAPSEED EXTRACT

It seems it's not just the skin of grapes that is useful for our own skin, but also the seed. Grapeseed extract contains high levels of flavenoids called oligomeric proanthocyanidins (OPCs), which effectively protect collagen structures in several ways. They reinforce the collagen matrix of connective tissue, protect against free radical damage, and inhibit collagen damage caused by inflammation and infection.

Their antioxidant effect is reported to be 50 times greater than that of vitamin C and E. A major advantage of these molecules is that they are taken up into the cell membranes and protect against both water- and fat soluble free-radicals.

DIET

A well balanced and colourful diet will contain many of these anti-wrinkle compounds and nutrients, especially if we are selecting diverse varieties of vegetables and fruits grown and harvested in the correct season and soil conditions. This, of course, is becoming harder to achieve, especially if we are relying on commercial produce. You may well want to add in a good quality formula that provides at least some of the nutrients that we know work well together to keep your skin in top form. I would suggest avoiding cigarette smoke, car fumes and other sources of pollution that can contribute to skin damage. Use organic or biodynamic produce where possible, or make sure your food has come from a farm where the use of pesticides, antibiotics and other harsh chemicals are kept to a minimum.

We also need to ensure our diet is hydrating and alkalisng, with plenty of soups, salads, and gentle grains such as rice and millet that have been soaked and slow cooked in plenty of fluids. Sugar, caffeine and other stimulants can be dehydrating and depleting of vital nutrients. Drink a sensible amount of pure water – perhaps 1.5-2 litres spread throughout each day, plus some nurturing herbal teas, such as silica-rich nettle or soothing chamomile.



ACNE, ECZEMA AND OTHER SKIN COMPLAINTS

In addition to these common signs of aging, many of us also struggle to cope with outbreaks of acne, psoriasis and other skin conditions. Our skin often reflects and supports processes we are going through – perhaps elimination of toxins, stress or grief. I believe we shouldn't try to suppress any of this activity, although many topical lotions do just that: push it all back in again and shift the stress to a more vital organ.

Our skin is our largest organ of elimination, and one that the liver and kidneys often use as a way of getting rid of toxins and waste from the body. We can usually do this through perspiration, but if we have a particularly heavy toxic load to eliminate, we can often break out in spots, rashes and other eruptions. This cleansing response can be supported, rather than suppressed, with a gently cleansing diet, sensible quantities of water, and perhaps some naturopathic techniques to help support the liver and colon. The diet might be low in caffeine, sugar, dairy and additives, and rich in alkalisng vegetables and gentle proteins, alongside some of the more hydrating grains such as shortgrain brown rice.

Sometimes the skin just cannot cope with this extra load, becoming extremely toxic itself and therefore compromised in its functions. Eventually some of the skin cells become inflamed, proliferate and harden. This would at least partially account for the soreness, irritation and appearance of complaints such as eczema, psoriasis and

“Our skin is our largest organ of elimination, and one that the liver and kidneys often use as a way of getting rid of toxins and waste from the body.”

dermatitis. Many topical lotions and oral medications aim to suppress this activity, where a holistic approach would seek to support the internal organs while providing the nutrients the body needs to create new, healthy skin tissue.

Our skin can also reflect the health of our intestines. Several studies have demonstrated defective behaviour in the intestinal mucosa of eczema patients – essentially what might be described as “leaky gut syndrome”, where the intestines absorb larger particles than they should. These particles can then go on to create problems throughout the body, including inflammation and increased keratinisation at skin level. We need to soothe, hydrate and heal the gut to address this aspect of various skin conditions.

It will not be surprising, then, that probiotics have found a place in the treatment of acne, eczema and other skin complaints. The more balanced the bacterial balance in our intestinal flora, the more integrity they can show. In addition, probiotics may help to balance bacteria in all our mucous membranes, and that includes the skin. A 2010 study demonstrated the ability of probiotics taken orally to inhibit the growth of *Propionibacterium acnes*, the bacteria responsible for acne.

In addition, zinc is a natural anti-inflammatory, and together with some good omega 3 oils (such as krill, fish or flax oil), and a clean and nourishing diet, can help to keep both the gut and the skin healthy.



SKINCARE PRODUCTS

There are good, simple, nourishing creams out there that don't stifle or suppress our skin's health and beauty.

They are few and far between, and many people opt for pure coconut oil as an effective moisturiser that allows skin to breathe.

We often hear that with age comes wisdom. Let's be wise enough to nourish our skin from the inside, to keep it naturally smooth, supple and free from unnecessary wrinkles. Let's grow old gracefully.



Should you need a more detailed approach, or should you have any questions or concerns that are not addressed in this article, you are always welcome to contact our nutritional advice team on 01395 227850 (9.00am – 5.00pm Monday – Friday).

Alternatively if you would like a more personalised approach, addressing dietary recommendations, lifestyle changes etc., we would suggest you consider consulting a qualified nutrition adviser or therapist, which you can do by either asking us for details of your local

practitioners, or contacting The Federation of Nutritional Therapists on 0870 312 0042 or by emailing them at admin@fntp.org.uk

For more information visit the website at: www.fntp.org.uk

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¹ It is interesting to note that the same range of nutrients can be useful for all of our connective tissue, including muscles, tendons and blood vessel walls, for example, providing benefits from heart health to digestive function. Thus helping us to feel good and look good all at the same time.

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⁷ Takahashi, S. Collagen & Amino Acids Study. Meiji Seika Health and Bioscience Institute, http://collageena.com/info_amino_acids_study.html

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Journal of Clinical Nutrition, October 2007.

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¹⁵ Given orally and topically together.

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¹⁷ Prasad, A S. Clinical, endocrinological and biochemical effects of zinc deficiency. *Clin Endocrinol Metab.* 1985 Aug;14(3):567-89.

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²⁰ Baur, J A et al. Resveratrol improves health and survival of mice on a high-calorie diet. *Nature*. 2006 Nov 16;444(7117):337-42.

²¹ Aziz, M H et al. Chemoprevention of skin cancer by grape constituent resveratrol: relevance to human disease? *The FASEB Journal*. 2005;19:1193-1195.

²² Lyons, M M et al. Resveratrol in raw and baked blueberries and bilberries. *J Agric Food Chem.* 2003 Sep 24;51(20):5867-70.

²³ Various types of packing and enemas may be useful according to the individual. A good Natural Nutritionist or naturopath should be able to put an appropriate programme together.

²⁴ Jackson G et al. Intestinal permeability in patients with eczema and food allergy. *Lancet* 1981; i: 1285-6; Ukabam S Et al. (1984), Small intestinal permeability to sugars in patients with atopic eczema. *British Journal of Dermatology*, 110: 649-652; Pike M G et al. Increased intestinal permeability in atopic eczema. *Journal of Investigative Dermatology* (1986) 86, 101-104.

²⁵ Dr. John Pagano's "Healing Psoriasis" (Pagano Organisation, 1991) offers some useful insights.

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