



Newsletter



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Nutrition and Aging

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Today people are spending a great deal of time, effort and money on anti-aging therapies in order to try and maintain their youthful appearance and reduce the common signs of aging. However, a significant percentage of these people do not realize that our outward appearance, as well as our physical energy and mental outlook is greatly influenced by internal biochemical processes. These processes are markedly affected by nutritional factors, such as the foods we consume and the nutrients derived from them.

What Is Known About Aging

Aging is defined as the process of growing old, especially by failure of replacement of cells in sufficient number to maintain functional capacity. The gradual deterioration of a mature organism resulting from time dependant, irreversible changes in structure that are intrinsic to the particular species, and which eventually lead to the decreased ability to cope with the stresses of the environment, thereby increasing the probability of death.

Genetic Theory

One theory of aging is the “genetic theory,” which states that each species has a predetermined age and that cell death is a programmed event. This means that there is a maximum lifespan for each species. However, even though humans may have a predetermined lifespan of say 120 years, relatively few individuals reach this age. Therefore, something is interfering with the ability of most humans to reach this potential.

Free Radical Theory

Another theory on aging that is becoming more widely accepted is the “free radical theory”. Free radical production is a result of normal metabolism. The healthy body is capable of handling 99 percent of the normally generated free radicals. The remaining 1 percent contributes to the slow progression of aging. However, the addition of increased oxidative hits or stresses beyond the body's capability to cope leads to accelerated aging. Free radicals damage cells, tissues, organs and systems. Excessive oxidation leads to increasing damage of DNA resulting in premature cell death as well as diseases of aging. It is estimated that oxygen free radicals are responsible for 10,000 DNA based modifications per cell per day.

Needless to say, it is obvious that nutrition is an important part of combating free radicals through biological antioxidants. These antioxidants include enzymatic processes such as superoxide dismutase (zinc, copper, manganese dependant), glutathione peroxidase (selenium dependant), and catalase. There are lipid-soluble antioxidants such as tocopherols, carotenoids, quinines and bilirubin, and water-soluble antioxidants such as ascorbic acid and uric acid.

The ability of the body and cells to be adequately protected from oxidative damage however, is not dependent upon nutritional adequacy alone, but by the balance among nutrients within the body. For



example, excessive free radical production can be caused by an imbalance between iron and copper as well as between zinc and copper, calcium and magnesium, etc. Further, a disturbance in toxic ratios such as low Zn/Hg, Zn/Cd, Se/Hg and Ca/Pb are also related to cell damage as a result of increased free radical production. Therefore, proper nutrition should not be limited to dealing with single reversible nutrient deficiencies. But more importantly, emphasis must be placed upon imbalances among the nutrients, which appear to outweigh single deficiencies by ten to one.

Hormonal Imbalances

Hormonal imbalances will also contribute to chronic disease and may increase the aging processes as well. For example, stress hormones contribute to cellular damage related to cardiovascular disease development as well as neurological deterioration. High insulin levels damage cells, tissues, organs and systems while estrogen/progesterone disturbances lead to cancer. Thyroid disturbances either too high or too low will dramatically affect the aging process. Unfortunately, these examples can go on and on.

Some Physical Signs of Aging Related to Endocrine and Nutritional Disturbances

There are a number of outward physical signs of aging. Primarily, the skin is usually the first organ to reflect signs of nutritional imbalances and show indications of the aging process. Whether this process begins early or late in life does not depend upon chronological age alone, but upon the internal environment.

Skin pH and Moisture

The skin is an eliminative organ and acts as a barrier from environmental insults. Healthy skin should normally be slightly acidic, this is called the “acid mantle” which is a natural protective barrier against bacteria. A marked reduction in the metabolic rate can lead to an alkaline tissue pH. This can be contributed to by increased calcium accumulation.

Normally as the skin cells mature, they move from the deep layers to the outer surface, forming a protective layer. When excess calcium accumulates in the skin this process occurs less rapidly. The outer protective layer becomes thicker and can lead to a dry, flaky appearance. Elevated tissue calcium can indicate an increased need for essential fatty acids. When essential fatty acid intake is low, dandruff and dry skin can develop. Other physical signs include itchy skin, rough bumpy patches on the back surface of the arms.

Wrinkles

Calcium accumulation is a major contributor to wrinkling of the skin. Excess tissue calcium inhibits the normal moisture content of the skin, perhaps by its effect upon the thyroid gland. Skin moisture will normally reduce to some degree with age. However, dryness of the skin can be accelerated due to the use of diet and water pills and consumption of beverages that can dehydrate the body tissues.

Stretch Marks (Striae)

White or silver colored stretch marks in the skin commonly occur as a result of subcutaneous tears, which can develop during pregnancy, weight gain and strenuous exercise. Weakness of the skin can be caused by poor collagen integrity due to zinc, vitamins C and B-6 deficiencies. Vitamin C helps to maintain normal elasticity of the skin as well as enhances the skin's ability to resist infections. An elevation in tissue copper will antagonize zinc and also reduce vitamin C content of the skin and cause a loss of normal skin tone. This nutritional imbalance is common in the Slow Metabolic types.

Red or purple stretch marks are more commonly found in individuals with an excessively Fast metabolic rate. Skin integrity is compromised in this group due to collagen breakdown and reduction in skin elasticity as well, but for different reasons. Copper deficiency results in a loss of collagen

strength resulting in breaks and weakness. The excess production of stress hormones in the Fast Metabolic type can also cause protein breakdown and contribute to the characteristic red or purple appearance of stretch marks. An excessively fast metabolic rate is also associated with a reduced thickness of the skin which can lead to bruising and easy injury.

Age Spots (Liver Spots)

Age spots, commonly called liver spots are areas of increased pigmentation of the skin usually seen on the back surface of the hands. These are often referred to as liver spots, but are more closely associated with adrenal activity rather than liver function. Age spots can develop as a result of an imbalance in adrenal function or imbalances in nutritional status. For example, the dis-relationship between iron and copper enhances superoxide and peroxide free radical production, leading to deposition of these pigments in the skin.

Skin Pigment Changes

Development of a dark pigmentation of the skin usually on the face often develops during pregnancy, and in individuals taking oral contraceptive agents. This condition may also occur in individuals who are not pregnant or taking oral contraceptives as an imbalance between estrogen and progesterone is believed to be related to this condition. Excessive estrogen can produce other changes in the skin such as white spots that appear when tanning. Supplementation of the mineral zinc and its cofactors, particularly vitamin B6 often proves beneficial in these conditions.

Stress, either physical or emotional, may affect the condition of your skin, If you are presently experiencing a skin condition, it may be aggravated or worsened by prolonged stress. Signs of skin conditions that may be affected by stress are:

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| Hives | Itching |
| Oiliness | Rashes |
| Flaking skin | Acne |

Sun-sensitive Skin

Sun sensitivity can be caused by substances that are photosensitizers. These substances may increase skin sensitivity and worsen the effects of the sun. For instance, diet sodas increase susceptibility to sunburn and may cause brown pigmentation on the lips upon contact when sunning. Lime containing lotions and perfumes can increase the tendency for sunburns and may produce rashes when exposed to the sun. Additionally, perfumes containing oil of bergamot may cause skin rashes. Even deodorant soaps and lotions can increase susceptibility to sunburn.

The following medications may also contribute to photosensitivity:

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| Antibiotics | Water pills (diuretics) |
| Oral diabetic agents | Tranquilizers |
| Anti-fungal medications | Anti-histamines |

Hair Texture

Hormonal imbalances are known to affect hair health and texture. Low thyroid activity contributes to dry brittle hair and is associated with a loss of the outer portions of the eyebrows. Excess estrogen can affect the sulfur bonds within the hair and reduce the holding effects of permanent waves. This is often noticed prior to menstruation since estrogen levels and copper levels are highest during this time.

Hair Loss

There are several factors other than heredity that can cause hair loss. Hair loss may occur under conditions of excessive or prolonged stress. Stress causes sodium (salt) retention, which can accumulate around the hair follicle causing reduced transportation of nutrients to the follicle. Excessive sodium accumulation may also cause more hair follicles to go into a resting phase. Normal growth may return if the stress is relieved or reduced. If the stress becomes severe, normal growth may not return. The effectiveness of some antihypertensive

drugs may be due to their tissue sodium lowering effects.

Hair loss will often occur after pregnancy. This type of hair loss is due to elevation of estrogen and copper during the last trimester of pregnancy. If this excess burden of estrogen and copper is not reduced to normal, hair loss may ensue.

Brittle, Splitting Nails

A calcium imbalance or deficiency is associated with brittle, cracking nails even though nail growth may be normal. Another common cause of brittle or thin nails may be due to oral contraceptive use. If this is the case, nails may be helped to become stronger by adding zinc and sulfur supplements to the diet rather than using gelatin as a treatment.

Elevated tissue copper especially in Slow Metabolic types may result in brittle nails. This may be due to poor circulation to the nail matrix. Cold hands and feet are an indication of possible poor circulation. Vitamin B-3 or niacin has often proved beneficial for improving circulation as well as improving brittle nails.

Slow growth of the nails has been associated with a lowered thyroid function. Nail growth rate has been found to increase with an increase in thyroid function.

Ridges In the Nails

Longitudinal ridging of the fingernails may be an early indication of iron deficiency that may be caused by insufficient intake of iron, or the displacement of iron due to another mineral or vitamin deficiency. Accumulation of toxic heavy metals may also displace iron from the body, or even cause a lack of utilization of iron already present in the body. Iron deficiency may also contribute to flattened nails.

Deep grooves or depressions running across the nail are called Beau's Grooves and may be caused by an

imbalance between calcium and magnesium

White spots appearing in the nail is associated with a zinc deficiency or a disturbance in the normal zinc to copper relationship. White spots may develop following a viral episode, a time when there is a drop in zinc and/or increase in copper.

White lines running across the nails called Mee's Lines can be an indication of arsenic exposure.

Aging And The Metabolic Rate

The first thing that comes to mind when we think about age or youth is energy levels. Children and young people are usually full of energy. A reduction in the metabolic rate is generally associated with lower energy levels resulting in fatigue and can lead to depression, pessimism and even a low self esteem. Further, depending upon the degree of energy loss, a tendency to gain weight especially in the lower part of the body may develop along with an inability to lose weight and keep it off. Eventually if lowered metabolism becomes chronic, it will be accompanied with a slower than normal cellular rejuvenation or replacement. This includes the cells of the skin, hair and nails.

A lowered metabolism will eventually result in a reduced functioning of the important eliminative organs such as the liver, kidneys and the sweat glands in the skin. When decreases in the function of these important organs become impaired, by-products or toxins normally produced by the body's metabolism as well as environmental pollutants, heavy metals, etc, are not eliminated efficiently.

An accelerated metabolic rate or an excessively Fast Metabolic rate can also contribute to an increased aging process. Fast Metabolism is associated with increased stress hormone production. Stress hormones tend to cause excessive free radical production and when chronic or severe contribute to

degenerative processes. Excessive metabolism can also eventually contribute to symptoms of anxiety and increased weight gain in the stomach or upper torso region of the body.

Conclusion

It is a fact that we all age, which is a normal part of life. However, the dynamics of aging are affected by genetics, lifestyles and environmental factors. Lifestyle factors include nutrition, diet, exercise, stress, drugs and disease. Environmental factors include exposure to pollution and chemicals.

The concept of nutrition has been expanded to address not only nutritional deficiencies, but to also deal with chronic degenerative disease as well as achievement of genetic potential and extension of longevity. Even though genetics play a part in our lifespan as well as the aging process, proper nutrition is closely linked to and will affect our genetic expression. Damage to our DNA can be caused by a deficiency of essential nutrients and can therefore, contribute to degenerative diseases, reduce lifespan and accelerate

aging. A deficiency of the mineral zinc can cause chromosomal damage similar to the effects of radiation. Iron deficiency contributes to breaks in DNA and deficiencies of niacin, vitamins C, E, and folic acid also contribute to chromosomal damage. Deficiencies of these nutrients alone or in combination are associated with colon cancer, heart disease immune disorders and neurological symptoms such as memory loss. But, as stated by German, et al (J. of Nutr. 2003), “identifying nutrient deficiencies does not resolve all nutritional problems. Rather than diseases caused by deficiencies of essential nutrients, these new health problems are results of dietary imbalances and the inability to control metabolism accurately within a range of lifestyles.” It is known that the effect of nutrition is based upon genetic differences. For example, one diet may affect different people in different ways. Another way of putting it is that one diet may be beneficial for one person but not for another. The diversity among individuals genetic progression requires personalized intervention and thus prevention of chronic disease and premature aging.



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