



Understanding Your Skin

By Archie McIntyre

Head of Product and Formulae Development at Katharine Botanicals

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Your skin is the largest, and apart from your brains, the most complex organ in your body. Its job is to protect the rest of your body against the outside world, acting as a barrier against the entry of harmful substances and preventing the loss of water, electrolytes and other body fluids. It is also used as a waste disposal system to rid the body of unwanted toxins and as the temperature regulating system achieved by perspiration and the dilation of surface blood vessels.

Your skin is comprised of three layers, the epidermis, dermis and hypodermis. Each has a different job to do and each affects the quality and performance of your skin.

The Epidermis

This is the surface layer of your skin and is divided into 5 subdivisions or strata. If your skin is healthy the life cycle of your epidermis will be about 28 days. It will take around 14 days for the cells to migrate from the inner stratum (germinaticum) to the surface stratum (corneum) and a further 14 days to completely keratinise, and literally, fall off. The stratum corneum is what you see when you look in the mirror. There are no blood vessels in this stratum, what you are looking at are dead skin cells. This surface stratum acts as a protective barrier to the living cells underneath. It is itself protected and moisturised by a hydrolipidic film made up of water and other fluids from the sweat glands and oil from the sebaceous glands. This film is slightly acidic - the natural PH of your skin.

The Dermis

Underneath the Epidermis is the dermis or 'true skin.' It contains a rich supply of blood vessels; lymphatic, sebaceous and sweat glands; plus hair follicles and the nerve endings which register heat, cold and pain and provide the sense of touch. Also in the dermis is a complex network of fibres - connective tissues called Fibroblasts. They are mostly made up of a protein substance called collagen with a little elastin and reticulin. In young healthy skin these fibres are smooth, supple and connect in an orderly manner. Over time, these connections break down and the fibres begin to cross link, to bunch and to harden. As a consequence, your skin begins to wrinkle and lose its tone.

The Hypodermis

This is the skin's insulation layer. It comprises subcutaneous (fatty) tissue and muscle fibres in layers. The condition and thickness of the hypodermis can affect the skin's firmness and tone. With age the subcutaneous tissue layer can thin resulting in your skin losing its plumpness and starting to sag. At the other extreme this layer can become overhydrated, the lymph system which removes waste products stalls and stagnation occurs in the cells which become steeped in excess fluids and toxins. This process results in the subcutaneous cells hardening, a condition commonly known as cellulite.

The Ageing Process

Over the years your whole body will age, although the 'natural rate' at which this ageing should occur is subject to quite a deal of scientific debate. What is not disputed is that most people age prematurely, that is that the ageing process is accelerated, occurring faster than nature intended.

For many of us the most visible sign of the ageing process is our skin. We begin to wrinkle, to lose skin tone. Our skin dries out and loses the lustre of youth. To know if anything can be done to reduce these visible effects of the ageing process, we must first understand what is happening to our bodies, and specifically what is occurring in our skin.

The explanation of this process is at the same time both complex and simple. The range of biochemical actions and interactions is extremely complex and still subject to considerable scientific investigation and discovery. It may appear a contradiction therefore to say that the principles that drive the process are reasonably simple to understand.

We will concentrate on the simple 'principles' of the ageing process, but at the same time recommend that all distributors read Leslie Kenton's book "Ageless Ageing" which provides an extremely readable and more complete explanation of the ageing process.

As your skin ages a number of events occur at the cellular and intercellular levels, these include:-

The connective tissues in the skin - collagen, elastin and reticulin begin to lose their flexibility and suppleness. In youth these proteins are joined end to end in long strands which can move independently of the strands which surround it, providing the skin with its elasticity. When these strands start to form linkages between themselves, they are said to cross link. This process of cross linking restricts the ability of the strands to move independently, greatly reducing the elasticity and proper functioning of the skin. Not only do these cross linkages result in wrinkles, the visible sign of this process, but they also impede the movement of oxygen, moisture and nutrients through the collagen network. They also impede the elimination of cellular waste from the skin. The result is a loss of cellular vitality and cell damage. At a cellular level, things start to go wrong too. Due to reduced nutrients, and increased toxins the cells' natural protective system is weakened. Wastes can leak into the cells cytoplasm and cause the cell to poison itself. Damage to the DNA within the cells nucleus can lead to the production of damaged or mutant daughter cells which no longer function 'as nature intended,' while disruption to enzymes contained in the mitochondria can cause loss of, or incorrect, biological functioning. The combined effects of these cellular disfunctions is age - degeneration. The proper functioning of the skin is impaired, moisture loss is increased, cells regenerate more slowly, the skin thins, wastes accumulate, sebaceous glands atrophy etc. The consequences are all too visible in the mirror, slowly at first, but accelerating over time.

Explaining the effects of ageing at a cellular and intercellular level is fine, but what causes these changes to occur and can anything be done to prevent or slow this process of degeneration? Read on!

The Ageing Factors

Hereditary

We are all individual; each of us has our own genetic makeup, our own genetic time clock. This determines our physical make up and the natural ageing process that we cannot stop. In the final analysis there is no elixir of life, no magic potion that will keep us young forever.

However, as we stated previously, all scientific indications are that the vast majority of us age faster than this natural genetic time clock dictates.

Of course we should not automatically dismiss genetic factors as being beyond influence. For example some people 'inherit' a defective enzyme called delta-6-desaturase. A defect in this enzyme can display itself in a number of ways including:

- eczema and other auto-immune inflammatory diseases
- dry and scaly skin
- dry and scaly scalp
- hair loss
- excessive sebum production
- allergies

This enzyme converts the essential fatty acid (EFA) linoleic acid into gamma linolenic acid (GLA), which in turn is converted by the body into the regulating prostaglandin E1 (PGE 1).

The negative effect of this defective enzyme can be dramatically reduced if GLA is consumed or applied to the skin, effectively by-passing the defective enzyme. Borage oil has the highest level of GLA.

Free Radicals

Metabolism is the process by which we convert food to energy and is therefore the basis of life itself. The problem is that this life giving process produces a number of highly reactive by- products which are potentially damaging to our body. These are known as free radicals, atoms or molecules which are electrochemically unbalanced.

"Free radicals can cut other molecules down the middle, chop pieces off them, distort cellular information and generally wreak havoc with living systems. They can cause injury, inflammation and destruction to parts of cells, cell walls and to collagen fibres - the most important structural protein." (22)

"An important source of free radical harm in relation to ageing occurs through a process called lipid peroxidation. Lipid is simply the scientific word for fats and oils. Lipids are found all over our bodies. In the blood they are stored as potential energy. In the cells, they are joined to certain proteins called lipoproteins and are part of steroid hormones. Lipids are particularly important to individual cells because they largely make up the membrane which separates a cell from its surrounding medium. The lipids in our bodies come from the food we eat - saturated and unsaturated fatty acids. In fact it is absolutely necessary that we take in an adequate supply of unsaturated fatty acids for life and health... The trouble is that unsaturated fatty acids have a strong tendency to react with oxygen in the body to form chemical compounds known as peroxides. Peroxidation also occurs in the presence of oxygen in the atmosphere. Like free radicals, once formed in the body, peroxides then tend to join with lipids and to propagate yet more peroxides and free-radicals. These can cause serious damage to organelles in the cells and to cell membranes allowing cellular pollution...

Protect your body from stress, free radical and peroxidation damage - and you will dramatically slow down the rate at which you age." (22)

"When free radicals react with molecules of protein in the cell or in the tissue, these long chain proteins can become cross linked, which means they become molecularly bound together and tangled. As a result tissues lose their suppleness, skin wrinkles, veins and arteries become hardened and more inclined to build up deposits of cholesterol, your chances of developing cancerous growths increase and the genetic material in your cells, which is necessary for cell division and tissue repair, becomes garbled. Cross linking is a phenomenon which is fundamental to age-degeneration." (22)

Of course the news is not all bad, your body has a number of protective mechanisms to protect itself from the effects of free radical damage and lipid peroxidation.

"Our first line of defence comes in the form of special enzymes - free radical scavengers.... Each enzyme has a specific and very important task to perform, all of these are involved in the processes of protecting living material from damage. The second line of defence is made up of anti-oxidant nutrients... which serve as free-radical quenchers to mop up reactive molecular species including singlet oxygen and to neutralise their ability to cause damage. They include ascorbic acid, beta carotene, Vitamin A, certain amino acids, Vitamin E and Selenium." (22)

The ageing process, with its cross linking of collagen and cellular damage, is accelerated when the production of free radicals swamps our defensive system. We can reduce the accelerated effects of ageing if we can avoid this imbalance from arising. "Were the body's own metabolic processes the only trigger for free-radical production and cross linking, we would probably have little to worry about age-related degeneration, nor about supplying extra anti-oxidants for prophylactic purposes." (22)

The fact, however, is that there are a range of external influences which can trigger the production of free radicals in our body. It is these external influences or environmental stressors that can overwhelm our protective mechanism.

The damage to our body of exposure to these stressors will be multiplied if our defences are depleted, if our body is not producing sufficient protective enzymes or is deficient in anti oxidant nutrients.

In today's society, both these problems can, and do occur. Environmental stressors are on the increase, and our defences are increasingly vulnerable.

The most important environmental stressors are:

UV Radiation

The sun emits two types of ultra violet rays -UVA and UVB. UVB rays cause sunburn and damage the epidermis. UVA rays are more dangerous, they penetrate into the dermis where they "steal" electrons from water molecules within this layer. This creates hydroxyl radicals and peroxides, dangerous free radicals. With the damage to our ozone layer the ageing effect of UV radiation is significantly increasing making UV radiation the potentially No. 1 environmental stressor.

Air Pollution

There are a wide range of air pollutants that stimulate free radical production, these include ozone, sulphur dioxide, nitrogen dioxide, vinyl chloride and solvent vapours. Indeed more and more free radical generators

are being identified each year. Air pollution is increasing and represents a far greater problem today than it did 20 years ago. As the health consequences of this increasing pollution is already clearly apparent, how much worse will this problem become.

Heavy Metals

These toxic minerals include lead, aluminium, cadmium and mercury. Common sources of lead contamination come from motor vehicle exhaust emissions, lead in water pipes, lead-based paints, and food packaged in containers with lead in the lining. Studies have shown that between 30% and 50% of the available lead in the air is absorbed into the body. Think about that next time you are sitting in a traffic jam.

Refining and Processing Foods and Oils

This is a much bigger problem than any of us realise. Food processing strips food of vital vitamins, minerals, amino acids, essential fatty acids and bioflavonoids. In the worst cases it initiates oxidation of fats, creating a dangerous build up of free radicals in the food we eat. Examples of free radical promoting food processing practises include:

Refining oils

"In general refining oils removes waxes, resins, stearines, and phosphatides. When these are eliminated, chlorophyll, lecithin, pro vitamin A, vitamin E, copper, iron, magnesium, calcium and phosphorous disappear." (16)

"Polyunsaturates are heated to high temperatures during their refining and this dramatically alters their chemical structure. We know that once a polyunsaturated oil has been heated above 100 degrees C it increases the risk of peroxidation, a process that encourages free-radical cell damage." (2)

Refined oils are not only eaten but also applied to your skin. If cosmetic and skin-care products actually contain plant oils, rather than mineral oil or tallow, most manufacturers chose to use refined rather than cold or warm pressed oils because refined oils:

- are cheaper, why let quality get in the way of price;
- don't smell - cold pressed oils can have quite strong odours which cosmetic manufacturers do not want to affect the smell of their products;
- have less colour. Some unrefined oils are quite darkly coloured - not what is wanted by producers who want crystal clear gels and pure white creams, again fashion over functionality;

Cooking with oils

Heating most oils to a high temperature will cause free radical formation. "Amongst the least stable oils for cooking are sunflower, safflower, soya bean and rapeseed, all of which produce high levels of free radicals when heated." (2) Yet these are some of the most common oils used in the food processing industries and the home because of price. Indeed, "Soybean oil accounts for over 65% of the oil currently being used commercially." (16) The most stable oils, best able to resist free radical formation are Olive, Sesame and Grapeseed yet even these should not be re-used for frying.

Irradiation of food

This is the process by which radiation (usually gamma rays) are used to inhibit sprouting, ripening, or to destroy microflora, and thus increase the shelf-life of dairy products, fruit, vegetables, grains, meat and fish. "Increasing irradiation doses increases the changes to food's sensory and nutritional properties, mainly:

- (i) autoxidation of fats giving rise to rancid flavours.
- (ii) slight breakdown of sulphur amino acids causing 'off' flavours, especially in dairy products.
- (iii) breakdown of polysaccharides into smaller units, e.g., of pectin in cell walls leading to softening of fruit and vegetables.
- (iv) loss of minerals, e.g., thiamin and vitamin C, comparable to that arising from storage or cooking - this loss being additional to the subsequent loss on cooking" (23).

Not only does irradiation cause oxidation and the formation of free radicals, but it also destroys important anti-oxidants that protect the body against free radicals, including the sulphur amino acids and vitamin C.

Food Processing

This can also impact on free radical formation indirectly, by significantly reducing the anti-oxidants in the food we eat.

Examples include:

- Refining cereals. "Processing and refining of cereals lead to wholesale losses of vitamin E. The most serious is the vitamin content of white flour (92%) when it is produced from wholesale grains". (24)
- Cooking in Fat. "Cooking in fats destroys 70-90% of the vitamin E content. Greatest losses happen in the presence of rancid fats and oils and these cannot always be detected by taste. Continual use of cooking fats and oils (e.g., in chip pan) consistently destroys the vitamins in the food being fried". (24)
- Freezing. Vitamin E suffers "serious degradation in frozen foods " (24) for example deep frozen chips "can lose 68% and 74% of the vitamins after one month and two months respectively". (24)

Cigarettes

Cigarette smoke is implicated in free radical damage in two ways:

- (i) it creates acetaldehyde, a toxic substance that has been shown to cause cross-linking damage in collagen and is a carcinogen.
- (ii) it reduces the level of the important anti-oxidant vitamin C available in the body. Of especial concern is the damaging effect that this has on T cells, an important part of our immune function. T cells "protect against bacteria, fungi, viruses, foreign cells, and auto allergens help the body resist cancer and the auto- immune diseases". (22)

Chemical Pollutants

Increasing numbers of man-made chemicals are being implicated in oxidation and free radical creation. These include pesticides, insecticides, synthetic solvents and certain drugs. As the causes of cancer and age degeneration of your skin have a common cause in the damage to cells by free radicals, any compound that is potentially carcinogenic will have an ageing effect on your skin.

Emotional Stress

Emotional stress can and does play an important part in the ageing process. Emotional stress has been shown to reduce the effectiveness of our body's immune system. "Recent research shows too that lymphocytes from people suffering from all kinds of stress and from grief, say after the death of a close relative, have a markedly decreased ability to rise to the occasion when challenged by antigens threatening the health of the body".(22)

While emotional stress does not cause free radical production, it reduces the immune system's ability to neutralise their effects. If you are emotionally stressed, a greater protective load is placed on anti-oxidants taken into the body. If these are also deficient, the ageing effect of emotional stress can be extremely dramatic.

Additionally stress hormones block the synthesis of essential fatty acids into gamma-linolenic acid, creating the potential of GLA deficiency symptoms such as hair loss, dry-scaly skin and eczema.

Nutritional Deficiencies

It probably sounds silly to speak of nutritional deficiencies in a rich nation such as Great Britain, but we are serious. The problem is not the quantity of food, but rather its quality. The central issue is the type of food we eat, and increasingly the amount of that food which is processed rather than fresh.

People at risk from a nutritional deficiency include:

- Pregnant women.
- Nursing women.
- Women of child-bearing age who may need supplementary iron.
- Those who embark on a weight-reducing diet without professional advice.
- Children and adolescents in winter, and housebound adults who may not get sufficient Vitamin D from sunlight falling on the skin.
- Children and adolescents who, because of fads, do not have a properly balanced diet.
- Convalescents.
- The elderly and others who fail to prepare balanced meals.
- Those who live alone and often do not trouble to prepare fresh or adequate meals.
- Athletes in training and those in physically active occupations". (16)

In addition to these general deficiencies there is one specific deficiency that is common in this country yet generally disregarded. Selenium, an essential trace mineral, is the culprit. A selenium deficiency "can be induced by living on a diet high in refined and processed foods and also by living off foods grown on selenium deficient soils". (24) In the United Kingdom only parts of Norfolk have good levels of Selenium in the soil.

"Epidemiological studies indicate that those who live in areas of low selenium soils have more cancer and heart complaints than those living in high selenium soils". (24) This is not surprising as Selenium is an important and highly efficient anti oxidant, being "50 to 100 times more active an anti-oxidant" than Vitamin E. Of potentially greater importance is the fact that the body's own protective enzyme glutathione peroxidase requires both selenium and Vitamin E". (24)

In essence a selenium deficiency places added stress on the body's ageing mechanisms and the need for Vitamin E. One of the highest natural sources of selenium is Horsetail, which is included in a number of

ESSENTIAL BOTANICALS LTD products, though rarely in commercial cosmetic preparations. There is a recommended daily intake of Selenium in the United States of America, but surprisingly not in this country. Are you sure that you are getting enough Selenium in your diet?

Antagonists

Antagonists are substances that block, neutralise or immobilise the action of vitamins and essential fatty acids. They have the effect of creating the effects of deficiency even when these essential nutrients are present in the body in sufficient quantities.

Examples of antagonists include: "

- Vitamin A - mineral oil (liquid paraffin)
- Vitamin B1 - alcohol; antibiotics; excess sugar.
- Vitamin B2 - alcohol; antibiotics; oral contraceptives.
- Nicotinamide - alcohol; antibiotics; excess sugar.
- Vitamin B12 - oral contraceptives.
- Biotin - antibiotics; sulphonamides.
- Choline - alcohol; excess sugar.
- Vitamin E - oral contraceptives, mineral oil, ferric iron, rancid fats and oils.
- Vitamin D - mineral oil.
- Vitamin C - aspirin; corticosteroids; indomethacin; tobacco smoking, alcohol. " (24)

Of particular concern in skin care is the fact that mineral oil, the oil base of most cosmetics and skin care products, blocks the anti-oxidant actions of Vitamins A and E, both vital ingredients for anti-ageing skin care.

Of possibly even greater concern is the way that the body's conversion of Essential Fatty Acids can be blocked. "Processed fats can actually block the proper assimilation of EFAs, even when they are present in adequate quantities in the food you eat". (22)

"There is considerable evidence that in many people these conversions are not efficiently made or that they are blocked by poor dietary habits so that inefficient quantities of GLA, EPA and QDHA are available in the body to prevent degeneration. In other words it appears that many apparently healthy people are deficient in EFAs. The consequences of such a deficiency... include a number of symptoms from hair loss, dry scaly skin and poor tissue structure which can make the face lose its firm contours rapidly, to irritability, lethargy, a susceptibility to infections, painful swollen joints and premenstrual tension." (22)

"These are the most common agents which block GLA formation:

- Foods rich in saturated fats.
- Foods rich in cholesterol.
- Foods rich in trans fatty acids.
- Alcohol, in moderate to large amounts.
- Diabetes (too little insulin).
- Too much sugar.
- Stress hormones (the catecholamines such as adrenalin).
- Ageing.
- Zinc deficiency.

- Viral infections.
- Radiation.
- Cancer.
- Atopic conditions.

With so many blocking agents it is not surprising that people living in the western world may not be metabolising essential fatty acids properly, even though they may be eating plenty of them". (25)

Insufficient Humidity

The lower the level of humidity in the air the greater the loss of moisture in the skin. If skin is consistently exposed to excessively dry air the moisture loss can be excessive and the skin will become dehydrated. The rate of moisture loss will accelerate if the skin's hydrolipidic film is deficient or if due to GLA deficiencies skin cells are also abnormally permeable.

Excessive moisture loss stresses the skin, and leaves it more prone to attack by environmental stressors. While internally the dehydration impedes proper cellular actions and increases toxic build up. All these can be factors in accelerated degeneration of the skin.

Over exposure to insufficient humidity has been dramatically heightened by the introduction of modern creature comforts such as air conditioning and central heating. This is one reason why many people notice a loss of skin tone and excessive dryness during the winter.

Fighting Age Acceleration

We have identified a wide range of factors that contribute to the degeneration of the skin, and indeed our body as a whole. These degenerative factors are greater today than at any time in our history, and unfortunately there is no sign that these factors will lessen in the foreseeable future.

Care of the skin is no longer just a beauty issue, it is now a health issue.

The good news is that nature has provided us with a range of anti-oxidants, antiseptics, stimulants and nutrients which can help us fight these degenerative factors.

From The Inside Out

As many of the age accelerators we have identified are nutritionally related, it is obvious that correcting your diet can have a dramatic effect on your skin, and on your body as a whole. The complex question of diet is outside the scope of this paper, but is critical to the success of any co-ordinated skin care routine. If you are interested in exploring this subject further, I suggest the following books:

"Ageless Ageing" by Leslie Kenton. (22)

"Vital Oils" by Liz Earle. (2)

"The A-Z of Nutritional Health" by Adrienne Mayes. (23)

From The Outside In

Traditionally cosmetics and skin care products have concentrated on hiding the effects of ageing rather than providing anti-oxidants, stimulants, and nutrients to the skin to help control or counteract the causes of age degeneration.

This has led to the use of ingredients such as humectants and collagen to hydrate the surface layer of the skin and make it look softer and smoother. While such products do in fact have a cosmetic effect, they have no beneficial effect.

One common argument used to support this lack of functionality is that the skin cannot absorb any ingredients. In part this is true, but this is because the wrong ingredients are used.

"Studies in Europe have found that the skin can only absorb ten percent of most synthetic creams. This is partly because the mineral oils they contain cannot be dissolved by the skin fats, and partly because the large molecules of the active substances cannot penetrate the upper layer of the skin, with a few important exceptions (e.g., liposomes and essential fatty acids). In most cases ninety percent of the cream 'sits on the skin'". (17)

But what if you use ingredients that have a low molecular weight and which are soluble in the skin's fats? Let's see what the experts have to say.

"The notion that you can use vitamins to advantage on the surface of your skin is often dismissed by the uninformed who insist that relatively large molecules cannot be absorbed into the body through the skin and that they have no therapeutic effect. In fact just the opposite is true. Since just after the last world war scientists have known that the fat-soluble vitamins A, E and essential fatty acids were rapidly and easily absorbed through the skin's surface. They found that this was the only way they could treat many of the vitamin deficiencies of the concentration camp victims because their digestive systems had degenerated so greatly that they could not get adequate nutrients through their foods. The effect of topical application is anything but superficial.... Recently much work has been done with the water soluble vitamins and some of the minerals as well - using them in topical applications with remarkable results. The advantage of using vitamins and nutrients this way is that they can reach the area you are trying to treat - in this case the skin - without being used up or converted into some other metabolite in the body. So even small doses of them applied topically can be helpful". (22).

"It is indeed because the skin is such an effective absorber that essential oils need not be taken orally - where in any case they only come into contact with the digestive system and all its rubbish. The natural and extremely small molecules of essential oils penetrate the dermis and get to work with their purity maintained". (6)

Sounds promising doesn't it? There is a system by which anti-oxidants and nutrients can be effective if applied to the surface of the skin.

Let's now consider some of the ingredients which could form part of this nourishing and protective system.

Vitamin E

"Vitamin E has a long history of being used topically. Because of its anti-oxidant properties, applied to the surface of the skin it can help protect cells from the damage caused by exposure to UV light... and, thanks to its potentiating effect on Vitamin A, it can make this vitamin more available for healing and good skin care functioning". (22).

Vitamin A

"Vitamin A has also been used with good results on the surface of the skin.... Albert Kligman, professor of dermatology at the University of Pennsylvania Medical School, has found that it enhances wound healing, increases blood flow to the skin and stimulates fibroblasts to produce new collagen". (22)

Beta-Carotene

"Beta-carotene is sometimes called pro-vitamin A because it is converted to the vitamin itself by your body". (22)

"The fact that, unlike retinol (vitamin A) itself, beta-carotene does circulate in the blood, appears to be important in the kind of anti-oxidant protection against age degeneration which it offers the cells and tissues of your body - particularly the skin and the lungs". (22)

Vitamin A can only be obtained from animal sources, while Beta-carotene, which is effective in its own right as well as once converted to vitamin A is found in high levels in Carrot oil and in Marigold flowers.

Vitamin B

The B group of vitamins function biochemically as co-enzymes in the metabolism. They are nutritionally essential but because they are water soluble rather than lipid soluble they unfortunately have no role in external skin care.

Vitamin C

Vitamin C "Functions biochemically as an anti-oxidant. Required for the hydroxylation of proline to hydroxyproline. This is a step in the synthesis of collagen, the protein of connective tissue and inter-cellular cementing substances important in maintaining health of bones, teeth, gums, cartilage, capillaries, connective tissue and in the healing of wounds and fractures". (23)

Vitamin C is a water soluble vitamin found in citrus and other fruits and vegetables. This is one anti-oxidant that we must rely on dietary sources to provide.

Essential Fatty Acids

"Essential fatty acids - the most recently discovered tools for improving skin quality and moisturisation - are useful both taken internally through foods or supplements and spread directly on the skin... in products which contain them. They can dramatically improve the texture, functioning and look of your skin. Rapidly absorbed through its surface, they reinforce the hydrolipidic film and the intercellular cement, strengthen cell walls so you get better cellular exchange of nutrients and elimination of wastes and increase your skin's moisture holding capacity". (22)

"Essential fatty acids are vitamin-like lipids. They are called essential because the body must have them and can't make them.... Some people have called... essential fatty acids 'Vitamin F' as there are some similarities with vitamins". (25)

Linoleic acid (EFA) is found in most plant seed oils, including Borage, Evening Primrose, Sunflower, Passion Fruit, Wheatgerm etc.

Gamma-linolenic acid (GLA), which is synthesised in the body from the essential fatty acid (EFA), or found in Borage Oil and Evening Primrose Oil, is the pre-cursor of the prostaglandin E1 (PGE 1). PGE 1 has a wide range of beneficial actions in the body. These include: "

- controls sebum production.
- inhibits abnormal cell proliferation.
- inhibits the synthesis of pro-inflammatory substances.
- blocks release of lysosomal enzymes, which are thought to be responsible for much of the damage caused during the inflammatory response.
- necessary for the normal functioning of T-cell lymphocytes." (25) "T-cells... protect against bacteria, fungi, viruses, foreign cells and allergens and... help the body resist cancer and the auto immune diseases". (22)

Essential Oils

"Essential Oils... are used for skin care since they heal, vitalise the tissue, stimulate the renewal of cells, cleanse and rejuvenate the skin, promote the metabolism, prevent or soothe irritation and infections, have an antiseptic effect and guarantee the stability of the cosmetics in a natural way. Essential oils work in a way that is - to one or another degree - antibacterial, bacteriostatic, and fungicidal". (17).

"Essential oils work cosmetically and as anti-ageing agents in several ways. They stimulate skin cells into reproducing in several ways. They stimulate skin cells into reproducing at a quicker rate, thus reducing the time-lag between new skin growth and the elimination of old cells. Skin that has been treated with essential oils thus becomes more dynamic and stronger. Essential oils can prevent the congestion of toxins and expedite the elimination of toxic debris by improving the lymphatic flow and general condition of the lymph glands. They improve circulation which aids oxygenation and energises the dermis by the rate nutrients are fed to it. Some can balance the rate at which sebum is produced by the sebaceous glands, thereby stabilising a healthy skin condition. As bacteroids they neutralise unwanted and unfriendly bacteria, preventing blemished conditions, and as anti-inflammatories, they calm sensitive and damaged skin. Since some oils contain phyto-hormones they create an equilibrium within our endocrine system which surpasses in effectiveness that produced by any other substance. The action on the peripheral nerve-endings helps to relieve the stress and tension that so often lead directly to an ageing skin - you look as worn out as you feel. Collagen and elastin are kept in good condition , and there is some basis to believe also that the nutrients and proteins contained in essential oils actually work as restorative building blocks to these all-important tissue fibres". (6)

"The most complex and perhaps the most fascinating of herbal constituents, providing the herbal practitioner with one of their most potent aids to treatment, volatile oils are nevertheless barely recognised as useful by conventional pharmacologists". (15)

The properties of volatile oils include:

"Antiseptic: this property is linked in part with the ready lipid solubility of volatile oils thus their easy entry into the interior of the pathogen. Once inside they seem to interfere selectively with the cell machinery of bacterial and fungal organisms.... Apart from a direct anti-pathogenic effect, volatile oils have the side effect

of increasing the amount of white blood cells in the blood (leucocytosis): this brings them in line with other herbal antiseptics in possibly supporting the body's own defences and encouraging endogenous protection as much as any direct disinfection.

Irritant: volatile oils stimulate tissues with which they come into contact. On the skin, they stimulate underlying circulation.... Many aromatic plants are associated with increasing circulation through the tissues and the volatile oils of ginger do highlight a general tendency to produce vasodilation, possibly by activating kinin, prostaglandin or other humoral mechanisms. This is one of the most important characteristics of the volatile oils.

Relaxant: apparently contradicting the previous action, this property reflects the general influence that volatile oils have on the nervous tissue.... What it implies is that a state of tension can be as readily diminished viscerally 'from the neck down' as by any sedative effect", (15)

Amino Acids

Amino acids are the building blocks of all proteins, including collagens and elastin. Twenty two separate amino acids have so far been identified, including eight which are considered essential because they cannot be synthesised within the body. Some, especially the sulfur amino acids methionine, cysteine and taurine are "important anti-oxidants, free radical scavengers, neutralisers of toxic wastes and aids for protein synthesis". (22)

"Cysteine occurs in good concentration in the hair and nails and is one of the most useful supplements in improving the health and good looks of both. It is equally important in keeping your skin smooth and young looking and in helping skin recover from damage. Like selenium, cysteine is particularly useful in protecting the body from chemical pollutants". (22)

Amino acids have a low molecular weight and can penetrate the surface of the skin and the cortex of the hair, improving the natural moisture retention capacity of both.

Plant Extracts

Plants are a treasure trove of chemicals with beneficial properties. Some of the most important groupings include:

- ***Polysaccharides*** - A number of these show "significant immuno-stimulating properties".(15) Plant sources include Chamomile and Marigold.
- ***Mucilage and Gums*** - "The key action of the mucilages is on the surface with which they come into direct contact. They produce a coating of slime that acts to soothe and protect any exposed surface. Thus the mucilaginous plants have been used primarily and universally as wound remedies, soothing pain, irritation and itching, and in their drying also often acting to bind any damaged tissue", (15) Plant sources include Comfrey and Aloe Vera.
- ***Phenols*** - "In general phenols are bactericidal, antiseptic... and anaesthetic". (15)
- ***Tannins*** - "These have been popular in most traditions, particularly for treating wounds and burns. Here their ability to complex with exposed tissue... has obvious advantages in protecting the wound from further harm and infection and hastening underlying healing". (15)
- ***Volatile Oils*** - Many plant extracts contain some volatile oils. When extracted from the plant these are the plant's "essential oils" and their actions are summarised under that title.
- ***Bioflavonoids*** - "They are a remarkable group of brightly coloured plant derived substances... which together with vitamin C make up what is commonly called the 'C' complex....

They potentiate the effect of ascorbic acid in the body as well as strengthening cell membranes and capillaries". (22) Scientists have identified specific flavonoids with the following functions:

- Anti-inflammatory agents.
- Detoxifying agents.
- Anti-infective agents.
- Anti-oxidants.

Bioflavonoids are found in high quantities in citrus fruits, buckwheat, and all white and yellow flowers and their extracts.

The Cosmetic Conundrum

ESSENTIAL BOTANICALS LTD products include examples of all the ingredients listed which can be absorbed into the skin. We just can't tell you that your skin will benefit from this happening.

We know that doesn't make sense. But that's the law. We can make claims galore about the effects that our products will have on the surface of your skin, but we aren't allowed to claim that they will have any functionality within.

"By law, cosmetic products are only allowed to treat the epidermis - the skin's outer layer. Anything which is absorbed into the dermis and which has a biological effect on the skin's deeper layers is supposed to be classified as a drug. However many of the most effective anti-ageing ingredients in skin treatment products - such things as placenta extracts, specific amino acids, vitamins and plant extracts - undoubtedly improve the look and feel of skin and help work against age related changes, not only because of the way they act on the epidermis, but because they are in fact absorbed much deeper, where they bring about a stimulation to skin tissue which can improve cell metabolism, strengthen cell walls and even encourage the natural repair process to genetic material, thus helping to slow down the ageing process at a cellular level. Most of the best cosmetics have more than 'cosmetic' - that is superficial - actions. One of the ironies of maintaining such strict controls on cosmetic advertising is that cosmetic ads tend to sound all alike since manufacturers of genuinely active products can say little more about them than those who produce jars full of empty promises. The old idea that cosmetics are only superficial because they sit on the surface of the skin, is an evasive half truth". (22)

Why isn't the law changed, if the law is an ass? Because it's not in the interests of the cosmetic industry to lobby for change. A change would lead to competition on real rather than imagined product quality, and it would lead to consumer education. It's much more profitable to keep consumers in the dark. This way it's you and your friends, and fellow consumers who lose out.

This is why our focus at ESSENTIAL BOTANICALS LTD is educational. We seek to empower the consumer by de-mystifying the issues of skin care and the aura of the cosmetic industry.

Compare our products with the products you now use. Do they list active ingredients? Do they quantify those active ingredients? Do they tell you whether they are natural or synthetic? Do they make sense when judged against the causes of age degeneration and the logical 'treatment' of those causes?

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