



## Articles

### **VITAMIN C**

**By Dr. Des Fernandes**

**Vitamin C** is ascorbic acid and is naturally found in nature, while some animals have the ability to produce their own vitamin C, human beings do not produce vitamin C themselves and are totally reliant on the vitamin C they get in their diets. Vitamin C is a water-soluble vitamin and we do not have large stores of vitamin C in our body. If we don't eat vitamin C then within about six weeks we develop the signs of deficiency of vitamin C, that is scurvy. Vitamin C is normally deposited in the skin and is an essential part of the anti-oxidant brigade to protect skin against free radical assault from the atmosphere and from ultra violet light. Vitamin C plays a very important in converting inactivated vitamin E back into an active anti-oxidant form of vitamin E. This is probably the reason why vitamin C has such an important role to play in the protection of cellular membranes even though it is a water soluble product while cellular membranes are mainly composed of lipid molecules.

Vitamin C is denatured in the skin by exposure to blue light and also to ultra violet light in the group A. As with vitamin A we probably develop a chronic deficiency of vitamin C in all the areas of skin that are exposed to sunlight. Vitamin C does not seem to have any activity on DNA itself, but certainly does work on various enzymes in the body. Therefore vitamin C has both an anti-oxidant activity and a metabolic activity.

#### **Vitamin C in photoageing:**

Vitamin C plays a potent role in diminishing the effects of free radical damage and in this role can be quite effective as a protectant from ultra violet light damage. The advantage of vitamin C over a sunscreen is that vitamin C can be absorbed into the cells and is generally still present about 30-36 hours after it has been applied topically to the skin. It will, therefore, still give sun protection even though the subject may have washed their skin or gone swimming. As a result of this we can expect that vitamin C can slow down photoageing.

#### **Wrinkles:**

Vitamin C plays an essential part in the incorporation of proline into collagen and is also involved in the formation of elastin. With a deficiency of vitamin C impaired collagen is created and the skin can become more wrinkled. The replacement of vitamin C boosts the manufacture collagen and so wrinkles can become less noticeable after using vitamin C.

### **Pigmentation:**

Vitamin C effects pigmentation in two ways: The creation of melanin is an oxidative process and so a powerful antioxidant like vitamin C could counteract the oxidative process required to create melanin. Ascorbic acid also has a role to play as an inhibitor tyrosinase. Tyrosinase is essential for the formation of melanin, so if it is inhibited then the action of pigmentation is reduced.

### **The use of vitamin C in scarring:**

The use of vitamin C for scarring of the skin is a recent discovery. In this case the vitamin C has to be delivered in high dosage to the skin and as a result of that more collagen will be formed and normal collagen that is often found tethering scars will be replaced with normal collagen and the scars will fill up to a degree and become less noticeable. This process seems to be best effected with the use of iontophoresis. Enclosed is a photograph to show the numerous effects of vitamin C when iontophoresed onto a patient with severe chicken pox scars. You will notice that after a period of 24 treatments of iontophoresis of vitamin C the skin looks smoother, the pigmentation has been reduced and the scars are flatter.

### **The role of the beauty therapist in the preparation of the patient for laser resurfacing of the skin:**

Laser resurfacing of the skin is a destructive procedure of the epidermis of the skin and is best likened to a superficial burn of the skin. In most cases the whole of the epidermis and the rete pegs are destroyed and the skin has to heal from remnants of epidermal cells found in the hair follicles and the sweat glands. In a superficial burn of the face which has very many hair follicles and sweat glands, the healing phase can take about five to seven days.

Bearing this in mind the beauty therapist should prepare her client for the laser by getting the skin into its optimum health. To do this one has to make sure that the vitamin status of the skin is kept up in its healthiest condition and daily applications of vitamin A and C, together

with the antioxidant vitamins E and beta-carotene should be done. One should try and reduce excessive horny layer or rough skin prior to the laser treatment. If the laser treatment is planned in several months and the patient has rough skin then it is worthwhile to do some ultra light peeling on the skin simply to reduce the amount of the horny layer. This may be done with the daily use of an alpha hydroxy acid. The one that I favour most would be lactic acid, and then periodic ultra light peeling done once a week with a low dose alpha hydroxy acid.

The skin care therapist can influence the keratinocytes so that they will grow faster and heal the wound much sooner. The best way to do this is to prepare the skin with vitamin A, which increases the rate of keratinocyte duplication. This effect would be boosted by the use of alpha hydroxy acids, which would also stimulate keratinocyte growth in the early phases. The client has to be carefully trained in sun protection strategies, because once the skin has been treated with laser, then it will be significantly more sun sensitive. The reason for the sun sensitivity is the very thin horny layer that will persist for several months and also the fact that the epidermis is very much thinner than it used to be. The client should be instructed in the use of a proper protective hat and, if necessary, the use of sun protection creams.

On the point of sun protection creams it is probably wiser not to rely on a cream with a SPF ratio of higher than about 16-20. The reason for this is that one needs to reduce the exposure of the skin to inorganic sunscreen chemicals as much as possible. In this regard it is wiser to use a product which has a major component of inorganic sunscreen chemicals. The additional advantage of these reflective sunscreens is that they may further reduce the clients' chances of getting increased pigmentation following laser treatment. The most perfect sunscreen product would also contain antioxidant vitamins beta-carotene, vitamin E, vitamin C as well as the soothing antioxidant pro-vitamin B5.

If the client has acne and is being treated with laser treatments for acne scars, then it is a wise idea to reduce the status of the acne. This should be done with the daily use of low dose vitamin A which is ideally combined with Australian Tea Tree Oil to reduce chances of acne development. The combination with benzoyl benzoate is also important. Please remember to use the benzoyl benzoate in the morning and the vitamin A rather at night. If necessary peeling should be done to control the acne and I recommend light, but frequent peeling, till the acne condition is stabilised. In acne patients I would the use of high dose vitamin C. However,

low dose vitamin C combined with the antioxidants, beta-carotene, vitamin E are safe for skin. I do not recommend the use of hydroquinone, though it is generally used by all doctors doing laser treatments.

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