

# **VITAMIN C, HYALURONIC ACID AND NIACINAMIDE**

## **INTRODUCTION**

Skin is the largest organ of human body and acts as a barrier against external sources. It consists of two layers mainly, epidermis and dermis. To maintain the skin in a good condition, the cosmetic product should be formulated with good active products such as vitamin C (Ascorbic acid), Hyaluronic acid and niacinamide. This review provides a complete detail about these three components and their action and benefits on human skin.

## **VITAMIN C**

Human skin consists of a good concentration of vitamin C (Ascorbic acid) than other organs. Ascorbic acid is water soluble and is mostly found in the epidermal layer. It is a very good antioxidant to treat photoageing and also hyperpigmentation.

Vitamin C protects the skin from UV radiation. The free radicals formed are highly dangerous and can cause damage

to the cell membrane. This can further lead to photoageing, hyperpigmentation, wrinkles and solar elastosis. Sunscreens with vitamin C has shown to inhibit the collagen damage and increase the MMP production.

Ascorbic acid acts as a cofactor of enzymes such as lysyl hydroxylase and prolyl hydroxylase. It has a vital role in wound healing. Ascorbic acid helps in collagen formation in the site of injury therapy helping in wound healing.

Ascorbic acid is also used in case of hyperpigmentation by blocking the action of tyrosinase enzyme by interacting with the copper ions. Hence it decreases the melanin formation.

Vitamin C is available in the form of creams, serum and transdermal patches. It gets oxidized to dehydro ascorbic acid(DHAA) on exposure to light. PH of less than 4 is maintained for penetration into the skin. Derivatives of vitamin C such as Ascorbyl 6 palmitate, Disodium isostearyl 2-0 L-ascorbyl phosphate, Ascorbic acid sulphate and Tetraisopalmitoyl ascorbic acid are being used.

## **HYALURONIC ACID**

Hyaluronic acid is natural biopolymer which helps in moisturization and water retention. It helps in lubrication of eyes, joints and skin which decreases by age due to the deficiency of HA.

Hyaluronic acid consist of numerous protective physiochemical functions. It helps in reducing nerve impulses and nerve sensitivity associated with pain. HA reduces the production of proinflammatory cytokines and alters the immunity. It helps in reduction of Reactive Oxygen-derived free radicats. It is more important for tissue hydration, Regulating cell proliferation , migration and differentiation.

HA is a special moisturizing active ingredient in cosmetics and improves skin elasticity. It is available in the form of serum, cleanser, masks and for lip treatment.

HA helps in revitilization of skin, smoothens the fine lines and wrinkles, helps to draw and retain moisture, reduses inflammation, Increases collagen level, promotes even skin tone, improves skin elasticity and helps improve texture.

## **NIACINAMIDE**

Niacinamide is a form of vitamin B3. It is a water soluble vitamin and it is also known as nicotinamide. It has anti-

inflammatory, anti-ageing, anti-oxidant and skin brightening effect.

Topical niacinamide in the form of 4% gel has an anti inflammatory action in case of acne vulgaris. niacinamide is rich in antioxidant which protects the skin and prevents premature aging. It stimulates the lipid production and helps in firm and smoother skin. It moisturizes and strengthens the skin. With continuous use of the product the pores are tightened and the skin appears more clear and refined. Niacinamide regulates the sebum production and also possess antibacterial properties. It also inhibits melanin synthesis and hyperpigmentation.

## **CONCLUSION**

Hence, these three components vitamin C, Hyaluronic acid and Niacinamide are actively used in cosmetic field. These are well tolerated in the skin and provides good benefits to the skin.

## **REFERENCES:**

1. Topical vitamin C and the skin: mechanisms of actions and clinical application(Firas Al-Niaimi,

MRCP(UK)(Derm) and Nicole Yi Zhen  
Chiang,MRCP(UK)(Derm)

2. Vitamin C in dermatology (Pumori Saokar Telang)
3. The roles of vitamin C in skin health (Juliet M Pullar ,  
Anitra C Carr, margreet C Vissers)
4. Role of vitamin C in skin diseases (Kaiqin Wang, Hui  
Jiang, Wenshuang Li, Mingyue Qiang )
5. Ascorbic acid in skin health (Daniel Allemandi,Lisandro  
Hergert, Santiago Palmo,Sofia Brignone,Camila  
Clemente)
6. Significance of hyaluronic acid in cosmetic industry and  
aesthetic medicine(Anne Olejnik, Joanna Goscianska,  
Izabela Nowak)
7. Hualuronic acid, a promising kin rejuvenating bio  
medicine(Syed Nasir Abbas Bukhari.....Zahid  
Hussain)
8. Niacinamide in cosmetics: The power vitamin
9. A review of the range of effects of niacinamide in human  
skin(Paul Matts, John Oblong, D.L.Bisset)
10. Niacinamide-mechanism of action and its topical  
use in dermatology(Wohlrab J., Kreft D.)

11. Hyaluronic acid (Hyaluronan):a review(J.Necas,  
L.Bartosikova, P.Brauner, J.Kolar)