Vitamin A (Retinol) Function and Deficiency

Vitamin A, also called retinol, is an important vitamin that plays a role in a variety of functions throughout the body including, vision and skin health. This vitamin is needed by the retina of the eye for low-light and color vision. Therefore, night blindness is one of the first symptoms of vitamin A deficiency. Vitamin A in the form of retinoic acid is also important in the maintenance of normal skin healthy by activating genes and differentiating immature keratinocyte skin cells into mature epidermal cells. Therefore, skin changes like dry skin is often a sign of vitamin A deficiency. This vitamin also plays roles in gene transcription, immune function, embryonic development and has antioxidant activity.



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Mechanism

Retinol
Red-tin-owl
Retinol is another name for vitamin A and can be found in foods originating from animals. It contains an alcohol group and can be converted to other forms of vitamin A.

Constituent of Visual Pigments
Kaleidoscope eyes on Pigment-pig
In the eye, 11-cis-retinal is bound to rod and cone receptors. This structure changes from a cis- to trans- chemical bond through light activation, inducing an action potential in the optic nerve. Thus, Vitamin A is important for low-light and color vision.

Differentiation of Epithelial Cells into Specialized Tissue
Epithelial Cell being knighted as Special
Vitamin A in the form of retinoic acid is important in the maintenance of normal skin health, by activating genes and differentiating immature keratinocyte skin cells into mature epidermal cells.

Signs and Symptoms

Night Blindness
Nightgown and Blinds-over-eye
This vitamin is needed by the retina of the eye for low-light and color vision. Therefore, night blindness is one of the first symptoms of vitamin A deficiency.

Dry Skin
Dry Skin-suit
Vitamin A in the form of retinoic acid is also important in the maintenance of normal skin healthy by activating genes and differentiating immature keratinocyte skin cells into mature epidermal cells. Therefore, skin changes like dry skin are often a sign of vitamin A deficiency.

Considerations

Used to Treat Measles
Mustache-weasel
Measles continues to be a major cause of death in children in low-income countries, and is especially dangerous in children with a vitamin A deficiency. Vitamin A supplementation during acute measles has been shown to significantly reduce morbidity and mortality although the exact mechanism is unknown.

Antioxidant
Anteater-shield Eating Oxygen-molecules
Vitamin A has antioxidant activity and neutralizes free radicals, which can oxidize other molecules and can cause cell damage or death.

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