

Keywords

Hair
Cells
Nutrient

Summary

Coconut water, the liquid endosperm of green coconuts (Cocos nucifera), is a refreshing natural beverage, an oral rehydrating agent, and a supplement in nutrient media for tissue culture. Cococin is even more than that

Cococin



SABINSA CORPORATION

Coconut water is often described as a "natural isotonic sports drink", providing higher amounts of electrolytes such as potassium and magnesium than conventional sports drinks. Coconut water solids also have a prebiotic role, and beneficially influence the balance of microflora in the gastrointestinal tract. When topically applied, coconut water solids nourish the skin and hair, supporting healthy cell growth.

Cococin®, The Nourishment Factor® captures the goodness of coconut water in a convenient, free flowing, and powder form. Recently affirmed GRAS for use in foods and clinically validated for its topical benefits, Cococin finds multifunctional applications in cosmetic, personal care and food and beverage compositions.

Produced under a patented lyophilization process, the amorphous nature of the solid produced by this process protects the protein components and environment sensitive actives during subsequent pulverization and storage. During storage, the material transforms to the more stable, less hygroscopic, crystalline state.

Cococin blends seamlessly with cosmetic compositions, and easily disperses in water, making it a compact and versatile nutrient pool for use in topical formulations, as well as in functional foods & beverages that nurture from the inside out.

Nutritionally versatile

It is important to differentiate between coconut milk and coconut water. The ratio of RNA-phosphorus to DNA-phosphorus is significantly lower in the liquid endosperm of mature coconuts as compared to that of green coconuts. RNA plays an important role in amino acid transport and respiratory metabolism in living cells. Coconut water used to make Cococin is obtained from green coconuts at the optimal stage of maturity, to ensure a high content of RNA and growth factors, including shikimic acid, quinic acid and indole-3-acetic acid, along with essential vitamins, amino acids, and minerals. At the completion of growth, the solid endosperm and the last of the coconut water provide nourishment for the forming embryo and seedling. Thus, coconut water serves the role as a reservoir of nutrients to support tissue growth (Tulecke, et. al; 1961).

Coconut water has been used in the tropics as a nutritive and rehydrating agent to restore electrolyte balance in cases of diarrhea (Adams, et al.; 1992). A published research report mentions that coconut water can be used as a short term intravenous (IV) fluid (Campbell-Falck et al.; 2000). Other reported applications include use in total parenteral nutrition (TPN) (Petioianu, et al.; 2004), and sports beverages (FAO, 1998)

Cosmetics and nutricosmetics

Cococin is The Nourishment Factor® that provides a valuable nutrient pool for enhancing food

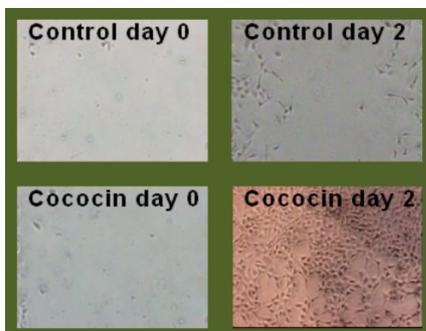


and beverage, as well as cosmetic product formulations. Cococin can be safely used in oral care as well as lip care compositions.

- Helps restore the skin health in aged and damaged skin
- Augments new cell growth while promoting healthy tissues
- Helps in wound healing
- Helps in skin hydration

Cell Proliferation enhancement

Cococin was used in the growth medium for fibroblast cell lines in an in vitro study (in Swiss 3T3 fibroblast cell line). Cell proliferation was significantly enhanced in cells treated with Cococin containing nutrient medium as compared to controls receiving standard nutrient medium.



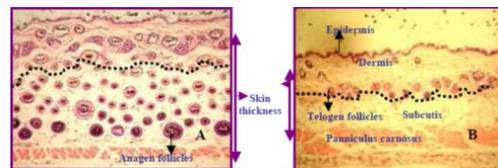
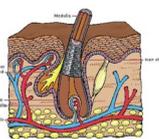
Cell Proliferation enhancement in Swiss 3T3 fibroblast cell line

Hair Growth

Each individual hair is formed inside a hair bulb deep in a hair follicle. The follicle is a tiny but powerful factory, which throughout many people's lifetime hardly ever stops working. From a baby's birth for many decades, as much as a century in some people, the follicle continues to produce hairs. Finally the hair spontaneously falls out. The follicle rests for a little while, and then starts to produce yet another new hair.

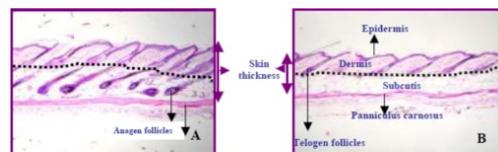
Between starting to grow and falling out years later, each hair passes through three distinct stages : Anagen (the growing phase), Catagen (the intermediate phase), Telogen (the shedding phase).

Cococin™ has been evaluated for its efficacy as a hair growth promoter, in comparison with Minoxidil as standard : Histological evaluation



A) Anagen phase of hair growth. The hair follicles are present in both subcutis and dermis. Presence of anagenic hair follicles in subcutis is accompanied by increase in skin thickness. B) Telogen phase of hair growth. The hair follicles are present only in the dermis, while no follicle is present in subcutis layer.

Hair growth Histopathological (transverse) sections of animals



A) Anagen phase of hair growth -The hair bulb is rigid and is present deep in the subcutis layer. B) Telogen phase of hair growth -The hair bulb is shrunken and is present in the dermis above the subcutis layer.

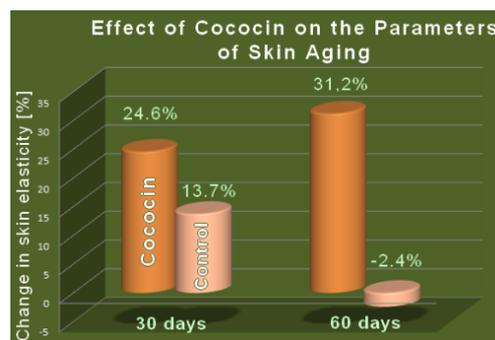
Hair growth : Histopathological (longitudinal) sections of animals

of the skin biopsies showed that the hair follicles were transformed from Telogen to Anagen phase of hair growth in the animals... showing a response to the topical application of formulations containing Cococin™ with hair growth promoting activity.

Animals treated with reference standard viz 2% minoxidil showed telogen to anagen transition in more than 70% animals. The maximal induction of Anagen was observed with 2% Cococin™ cream ,which equaled that of the reference standard (2% minoxidil) in the experimental conditions of this study

Reducing the appearance of skin aging

Twenty-two females in good health of ages 20-35 years old were subjects in a double blind placebo controlled clinical study (Research Report Sami Labs Ltd., 2005). A cream containing 1% coconut water solids (Cococin INCI: Cocos nucifera (coconut) fruit juice was applied onto the left arm of each subject, and the cream base was applied onto the corresponding area of the right arm, to serve as control. 200 mg of the cream and cream base was applied daily for eight weeks, to the marked areas on the left arm and right arm respectively (see figure below)



Effect of Cococin on the Parameters of Skin Aging : change in the skin elasticity in %

