Vitamin P & Skin Care

by wade cheng, ph.d.

In the 1930s, scientists treated subcutaneous capillary bleeding successfully with natural vitamin C. However later, it was surprisingly discovered that pure vitamin C had no effect on capillary bleeding. Therefore, it was speculated that there must be some other substance(s) in natural vitamin C responsible for such a difference. This hint led the Hungarian scientist, Dr. Albert Szent-Gyorgyi to discover vitamin P in 1936.

Natural vitamin C not only contains ascorbic acid, but it also contains some other components called flavonoids, or bioflavonoids. These components are also referred to as vitamin P. The letter P, for permeability factor, was given to this group of nutrients because they improve the capillary lining's permeability and integrity.

Flavonoids are mainly aromatic plant pigments, and most of them are yellow in color. The term flavonoid stems from the Latin word "flavus", meaning yellow. Flavonoids are water-soluble substances with a molecular weight in the range of 300 to 700 (They mainly have a basic skeleton of 15 carbon atoms.). There are more than 4,000 different bioflavonoids. The most popular ones are citrin, hesperidin, rutin, flavonols, catechins, flavonones, quercetin, anthocyanins and proanthocyanidins as well as isoflavonoids. Today, however, bioflavonoids are considered "vitamin-like" substances.

Bioflavonoids are found in many of the same foods as vitamin C, namely citrus fruits such as lemons, grapefruits, oranges, limes, apricots, cherries, grapes, black currants, plums, blackberries and papayas. Green peppers, broccoli and tomatoes are some good vegetable sources of bioflavonoids. It should be noted that red grape seed is particularly rich in bioflavonoids (proanthocyanidins-red color). Since bioflavonoids are produced via plant biosynthesis, the commercial supply of mixed bioflavonoids is obtained through an extraction process of botanical materials. The composition and concentration varies with materials used and processing techniques.

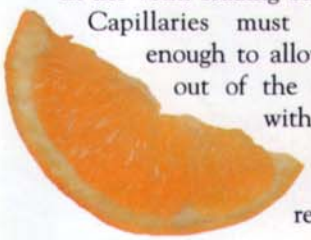
Similar to vitamin C, bioflavonoids are essential nutrients for human health. A deficiency of bioflavonoids may increase the tendency to bruise or bleed and the protection of vitamin C may decrease as well. Bioflavonoids protect the human body against many diseases such as colds, flu's, hemorrhaging, asthma, allergies, bursitis, arthritis, eye prob-

lems, and cancers, etc. There are numerous studies about the health effects of bioflavonoids.[1,2] The association of bioflavonoids with vitamin C is the reason that the natural form of vitamin C is more effective than pure ascorbic acid.

The estimated human consumption of mixed bioflavonoids is 0.5 to 1 gram per day. The intake of bioflavonoids is about 0.9 to 1.5 grams per day. After ingestion, bioflavonoids are stored in the body (mainly in the liver and colon). Orally ingested vitamins are not always transported to the skin in sufficient quantity due to poor absorption, improper function of the metabolic system, or aging. The topical application of bioflavonoids that provides the skin with local concentrations substantially higher than those attained by oral ingestion has a good advantage for skin care. As a matter of fact, most of the cosmetic-dynamic activities of a very large number of plants are due to bioflavonoids. Recently there has been growing attention to topical application of bioflavonoids in the cosmetic industry.

Bioflavonoids have excellent anti-oxidation properties. Some flavonoids such as quercetin and gallocatechins are far more effective anti-oxidants than ascorbic acid.[2] Consequently, bioflavonoids can protect ascorbic acid from oxidation. That is why a solution of natural vitamin C is more stable than that of pure ascorbic acid under otherwise the same condition. Bioflavonoids are also helpful in the absorption of ascorbic acid.[3] Therefore, bioflavonoids can enhance vitamin C's multiple functions via a synergistic effect. Bioflavonoids are highly recommended to be included in the topical application of ascorbic acid.

Blood capillaries link arteries to veins. Capillaries deliver oxygen and nutrients to organs, tissues and cells, then pick up carbon dioxide and waste in the veins leading back to the heart. Capillaries must be permeable enough to allow fluids to seep out of the capillaries, mix with the fluid that surrounds all cells and then re-enter the capillaries. If the capillaries are too permeable, too much fluid and proteins seep out resulting in edema. Even red blood cells may seep out causing bruising and red spots. Bioflavonoids regulate capillary permeability and increase the strength of the capillary wall to prevent breakage and rupture.



Due to aging, capillaries gradually become fragile, cracked or fractured. Aggressive skin treatments such as AHA peels, chemical peels and dermabrasion may also cause the same problem. As a result, the skin shows unpleasant broken capillaries (called couperose in Europe), spider veins and the associated edema.[4] The topical application of high concentration of bioflavonoids can prevent and even reverse these undesirable appearances.[3,5]

Bioflavonoids have a good anti-inflammatory activity and act as an immune supporter and detoxifier against allergies, inflammation, germs, viruses, bacteria, infections and skin irritations.

Some studies indicate that the activity of bioflavonoids on capillary health needs the presence of ascorbic acid.[6] It indicates that vitamin C and bioflavonoids are good partners and help each other. Therefore, it is suggested that a small quantity of ascorbic acid be incorporated during the topical application of bioflavonoids for capillary health.

Bioflavonoids inhibit lipid peroxidation in membranes to protect biomolecules in the dermis, such as hyaluronic acid, collagen and elastin. Flavonoids probably also block degradation enzymes such as elastase and hyaluronidase, etc., which cause destruction of these important skin components. Bioflavonoids play an active roll in scavenging free radicals, improving cellular activity and helping the synthesis of collagen and elastin fibers. Bioflavonoids definitely have an excellent anti-aging benefit for the dermis and are sometimes called "the vitamin of the dermis".

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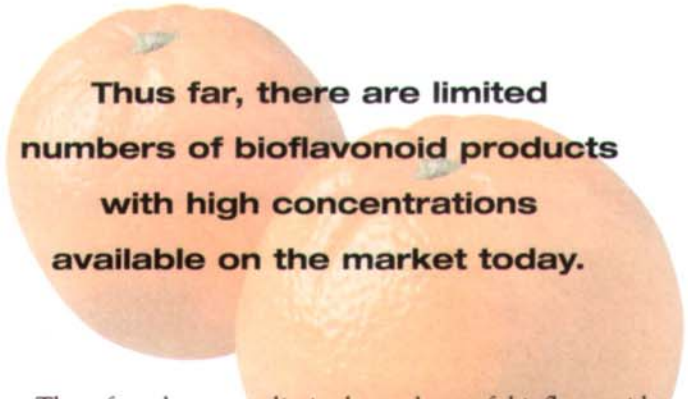
Bioflavonoids provide such functions via several mechanisms. They help stabilize mast cells and basophils and inhibit their degranulation and subsequent release of histamine and other inflammatory chemicals. They also inhibit some inflammatory enzymes such as lipid peroxidase and decrease leukotriene (another inflammatory molecule) formation.[6]

This special function of bioflavonoids can be utilized to treat sensitive skin or skin sensitivity often caused by aggressive alpha-hydroxy acid treatment, chemical peels, laser peels and dermabrasion.

Topical application of bioflavonoids has multiple skin benefits such as enhancing vitamin C's effect, preventing broken capillaries, protecting the dermis against premature aging and reducing skin's sensitivity.

Just like topical application of vitamin C, bioflavonoids provide a new dimension for skin care technology.

bioflavonoids



Thus far, there are limited numbers of bioflavonoid products with high concentrations available on the market today. These types of products usually show a distinct yellow or red color, which might not be cosmetically preferable. These products are usually very beneficial for skin health. However, the actual performance depends upon the composition of bioflavonoids used and the formulation.

Since there are thousands of different species of bioflavonoids, the topical application of bioflavonoids will be an important new subject deserving extensive study and research in the cosmetic industry. ■

Wade Cheng is Vice President and Director of R&D, Rejuvi Laboratory. Prior to this position, he was a senior research chemist in Smithkline Beckman Corporation, California Public Health Department and Biorad Laboratories. He holds a B.S. degree in Chemistry and Chemical Engineering. He also holds a M.S. degree in Analytical chemistry from the Univeraity of San Francisco and has a Ph.D. in biochemistry from the University of California-Davis. He has over 20 publications in many scientific journals. To contact Dr. Cheng, please e-mail him at rejuvi@mindspring.com.

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