Nutritional Immunology

OPCs

POTENT, POWERFUL AND VITAL TO GOOD HEALTH

強力、高效的OPC，維護健康的關鍵成份

In a happy accident, Jack Masquelier discovered the first *oligomeric proanthocyanidin* in the skin of a peanut in 1947. He called it Vitamin P, although the name didn't stick and it became known as OPC.

Strictly speaking, oligomeric proanthocyanidins (OPCs) refers to a group of similar compounds, particularly dimer and trimer polymerizations of catechins, which are classified as flavonoids and act as antioxidants. They have always been a part of the human diet since most plants contain some of these compounds, especially the skin, seeds and seed coverings. Red grape seed and skin, however, contain large amounts of OPCs. Other good sources include coconuts, apples, cocoa and the bark of *Pinus pinaster* (formerly known as *Pinus maritima*), or the French maritime pine.

1947年，馬斯魁勒博士在一場很愉快的意外中首次從花生皮中發現了原花青素，他將之命名為維生素P。儘管維生素P這個名字並沒有被延續下來，但這種物質卻以OPC這個名字被人們所知曉。

坦率地說，低聚原花青素(OPC)是指一組相似的化合物，尤其是兒茶精類的二聚體聚合物和三聚體聚合物－二者均屬於類黃酮，它們具有類抗氧化劑的作用。由於絕大多數的植物中都含有一些這類的化合物，尤其在某些植物的外皮、種籽和種籽的外皮中，這些化合物更是多見，所以它們從來都是人類飲食的一部分。紅葡萄的籽和外皮中，含有巨量的OPC，另外，椰子、蘋果、可可粉和海岸松(以前被稱為Pinus maritima)或者法國濱海松樹的樹皮，也都是OPC的優質來源。

Health Benefits of OPCs

Support for Blood Vessels

Proanthocyanidins suppress production of the protein endothelin-1 that constricts blood vessels. In helping to strengthen blood vessels, they also improve the delivery of oxygen to cells. Studies support the so-called French Paradox, which hypothesizes that intake of proanthocyanidins and other flavonoids from regular consumption of red wine prevents occurrence of conditions such as cardiovascular diseases and diabetes in French citizens consuming high-fat diets.

Antioxidant activity in proanthocyanidins plays a role in the stabilization of collagen and maintenance of elastin, critical proteins in connective tissue supporting organs, joints, blood vessels and muscles. Possibly because of their effects on blood vessels, proanthocyanidins have been reported in double-blind research to reduce the duration of edema after face-lift surgery by 3-4 days. In preliminary research, proanthocyanidins were reported to prevent chromosomal mutations.

OPCs also have an affinity for cell membranes, providing nutritional support to reduce capillary permeability and fragility.

Atherosclerosis and Heart Disease

Animal studies suggest that OPCs can slow or reverse atherosclerosis. This suggests that OPCs might be helpful for treating heart disease. Herbal flavonoids, such as those found in grape seed extract, may play a vital role in modulating heart problems. By virtue of being a mixture of active compounds, grape seed extract could act through

OPC的健康效益

保養血管

原花青素能抑制會造成血管收縮的蛋白質內皮素－1的產生。它還能促進人體向細胞的供氧，進而強化血管。科學研究支持了所謂的法國悖論，即法國人的飲食中脂肪含量雖然很高，但因為他們經常飲用紅酒，所以能夠攝取原花青素和其它各種類黃酮，這樣，類似心血管疾病和糖尿病這些病症就得到了預防。

原花青素的抗氧化活性在穩定膠原和維護彈力蛋白方面發揮著關鍵的作用，彈力蛋白是結締組織中的重要蛋白，這種蛋白在養護人體的器官、關節、血管和肌肉方面至關重要。或許，由於原花青素對保養血管有著積極的作用，所以，有雙盲研究報告指出，原花青素可將面部整容術後的水腫持續時間減少3－4天。有初步的研究結果顯示，原花青素能夠預防染色體的突變。

OPC對細胞膜還具有一種吸引力，能夠為細胞補充營養，減輕毛細血管的滲透度和脆度。

防治動脈硬化和心臟病

動物試驗研究顯示，OPC能減緩或扭轉動脈硬化的發展，所以，這項研究認為OPC或許有助於治療心臟病。植物類黃酮，比如從葡萄籽中萃取的類黃酮，在控制心臟問題方面可能扮演著重要的角色。作為一種擁有活性化合物這種特色的混合物，葡萄籽萃取物能夠以多種機製發揮作用，可能產生綜合性的積極影響。更多對植物類黃酮和心血管功能的研究，可能對安全而有效地治療和預防冠心病具有促進作用。[1]

1. Wang, Chong-Zhi. **Botanical Flavonoids on Coronary Heart Disease.** *Am J Chin Med. 2011; 39(4): 661–671.*
2. *Kimmel, Emily M., et al. Oligomeric procyanidins stimulate innate antiviral immunity in dengue virus infected human PBMCs. Antiviral Res. 2011 April; 90(1): 80–86. Published online 2011 March 1.*
3. *Woo, Yun Ju, et al. Grape seed proanthocyanidin extract ameliorates monosodium iodoacetate-induced osteoarthritis. Exp Mol Med. 2011 October 31; 43(10): 561–570.*

more than one mechanism, and could potentially have multiple beneficial effects. More study on botanical flavonoids and cardiovascular function may serve to promote safe and effective treatment and prevention of coronary heart disease.[1]

Periodontal Disease

Gingivitis, an inflammation of the gums, and plaque formation may lead to tooth loss from periodontal disease. In a 14-day, double-blind, placebo-controlled trial of 40 people, researchers evaluated the potential benefits of a product containing 5 mg of OPCs. Use of the OPC product resulted in significant improvements in gum health and reductions in plaque formation; no similar benefits were seen in the placebo group.

Anti-viral Activity

A study showed that OPCs stimulated immune cells in cultures infected with dengue fever. OPCs from various sources exhibit antiviral effects, but their mechanisms are not well understood. The capacity of OPCs to increase sensitivity could be broadly applicable to many viral infections. OPCs may represent a new route for antiviral therapy.[2]

Osteoarthritis

Grape seed proanthocyanidins appear to help ameliorate osteoarthritis by reducing free radical damage. Osteophytes, or bone spurs, may be a source of pain from osteoarthritis, but a study demonstrated that the number of osteophytes in rats treated with grape seed extract was lower than those in the control group.

OPCs also helped to reduce pain by inhibiting cartilage damage, synovitis and subchondral bone fracture. Proanthocyanidins appear to be a potential therapy for treating osteoarthritis.[3]

防治牙周病

齒齦炎，是一種牙齦炎症，而齒菌斑的形成可能會導致牙周病進而造成牙齒脫落。在一項有40人參加的為期14天的雙盲安慰劑對照試驗中，研究人員對含有5毫克OPC的產品的潛在效益進行了評估。結果顯示，使用了OPC的試驗者的牙齦健康得到了明顯的改善，齒菌斑的形成也更少；而相對應的安慰劑試驗組則沒有出現類似的效益。

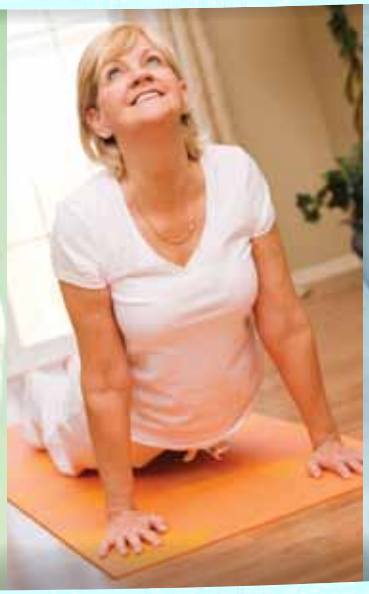
抗病毒活性

一項研究顯示，OPC在登革熱培養菌實驗中能刺激免疫細胞。取自各種原料的OPC都顯示出了抗病毒的作用，但是它們的生物機製目前還都未被深入地了解。OPC能夠增強敏感度的能力可以廣泛用於許多病毒感染，所以使用OPC或許可以成為治理病毒的一個新療法。[2]

預防骨關節炎

葡萄籽原花青素似乎能夠減輕自由基的損傷，進而減輕骨關節炎的炎症。骨贅，又叫骨刺，大概就是骨關節炎的疼痛之源，而一項研究顯示，使用葡萄籽萃取物的一組試驗老鼠罹患骨刺的數量少於對照組中患此病症的老鼠。

OPC還能防止軟骨受損、滑膜炎、軟骨下骨折，從而幫助減少疼痛，因此，使用原花青素似乎可成為防治骨關節炎的一種可行性療法。[3]



Diabetes

Proanthocyanidins appear to exert a protective role against hyperglycemia and hyperglycemia-related changes. The results of a study showed that the suppression of oxidative stress-related inflammation apparently caused this protective effect of proanthocyanidins. The study administered proanthocyanidins to both type 1 and type 2 diabetic rats. The results indicated OPCs reduced oxidative stress by inhibiting lipid peroxidation and the generation of free radicals. In addition, proanthocyanidins regulated the expression of proteins related to inflammation. In particular, the oligomeric proanthocyanidins lessened oxidative damage and fatty deposits in the liver more effectively than other forms of proanthocyanidins. Oligomerization may be associated with ameliorations of oxidative stress and abnormal lipid metabolism. Oligomeric proanthocyanidins act as regulators in inflammatory reactions caused by oxidative stress in diabetes.[4]

Oligomeric proanthocyanidins from grape seed extract are proving to be potent and powerful antioxidants with a wide range of healthy benefits for the human body.

Please note: high doses of OPCs should not be taken with blood thinners such as Warfarin (Coumadin), heparin, clopidogrel (Plavix), ticlopidine (Ticlid), pentoxifylline (Trental), or aspirin as they may cause a risk of excessive bleeding.[5]

防治糖尿病

原花青素似乎具有一種保護作用，可防止高血糖症和由高血糖症引起的病變。一項研究的結果顯示，原花青素在抑制氧化應激所引發的炎症時，具有明顯的保護效應。這項研究給患有一型和二型糖尿病的老鼠都使用了原花青素，結果顯示，OPC能夠抑制脂質過氧化作用和自由基的產生，進而減輕氧化應激反應。另外，原花青素還能調節與炎症相關的蛋白質的表現，而與其它形式的原花青素相比，低聚原花青素尤其能減少氧化傷害和肝臟中的脂肪囤積。低聚反應似乎能夠改善氧化應激反應應力和失常的類脂物代謝作用。在糖尿病症由氧化應激引起的炎症反應中，低聚原花青素發揮著調節器的作用。[4]

研究證實，葡萄籽萃取物中的低聚原花青素是強力而高效的抗氧化劑，對人體的健康有著多種多樣的健康效益。

請注意：服用血液稀釋劑如Warfarin(Coumadin)、heparin、clopidogrel(Plavix)、ticlopidine(Ticlid)、pentoxifylline (Trental)或者aspirin的人士不可同時大量服用原花青素，因為這樣可能導致大量出血的危險。[5]

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4. *Takako Yokozawa. Protective Effect of Proanthocyanidin against Diabetic Oxidative Stress. Evid Based Complement Alternat Med. 2012; 2012: 623879.*

5. *Oligomeric Proanthocyanidins (OPCs). NYU Langone Medical Center. Last reviewed July 2013. http://www.med.nyu.edu/content?ChunkIID=21765. Retrieved 1-8-2013.*