The Natural Active Substances
for the New Millennium

Living Longer in Good Health Through OPCs

The most powerful antioxidants in nature!

Maya Media

Anne Simons

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Foreword

Nowadays a trend can be observed which at first glance may seem paradoxical: although human life expectancy has dramatically increased during the last one hundred years and medicine has recorded unprecedented technical progress, the subject of health is gaining increasing importance for many people. Instead of blindly relying on these grand achievements, people are taking control of their own health care, obtaining information about alternative healing methods and displaying a great interest in a "healthy diet" as well as nutritional supplements. The market is booming.

Upon closer examination, we find that this development is not all that paradoxical. In statistical terms, our life expectancy has lengthened impressively, but, unfortunately, the period of time during which we enjoy good health has not increased proportionately. Symptoms of wear and exhaustion, especially in connection with a gradually degenerating immune system, manifest themselves in the course of time and severely impair our quality of life. What good is a long life expectancy if you spend half the time suffering pain and exhaustion or if you have to forego all pleasures! Our high-tech medicine is – with some luck – able to "repair" the worst cases, but physical breakdown, surgery and rehabilitation are linked to dramatic turning points in the affected person's life: in all probability, life after such an event is no longer what it used to be; in most cases it is impossible to continue as "before".

In view of this unpleasant notion – which unfortunately is grim reality for many people – we had better take preventive action, look for nutrients, vitamins and wholesome lifestyles in order to minimize health risks.

The search for the fountain of youth is a subject that is as old as the history of mankind: are there any substances that will keep us young and healthy for a long time?

This may sound rather audacious, but I nevertheless dare claim that they may indeed have been discovered, substances offered by nature which can spare us disease and ailing, even premature aging our whole life long ...

"OPCs" is the abbreviation for oligomeric proanthocyanidins. These are natural substances existing in numerous plants ... and in red wine. Their healing effects have been known for centuries, but the actual substances to which these effects are attributable have only been discovered and systematically explored in the twentieth century. Multi-faceted tests conducted according to strict scientific criteria have revealed amazing details: OPCs are the strongest antioxidants presently known, 18 times stronger than vitamin C and 40 to 50 times stronger than vitamin E! They have tremendous vasculo-protective properties, and are thus an important factor in the struggle against cardiovascular diseases, arteriosclerosis, heart attack and stroke. They lower the cholesterol level. Their collagen-enhancing properties result in numerous health benefits. They protect the skin – as well as all other body tissue – against rapid aging and wrinkle formation and they help to preserve a youthful appearance much longer.

Inflammation, allergic reactions, tooth decay, failing vision, lack of concentration and age-related cerebral disorders ... the list is extensive. I can only recommend that you form your own opinion: obtain information about OPCs and take them.

And rest assured that reputable scientists, pre-eminently Professor Jack Masquelier, have been investigating this substance, for more than 60 years. In France it has been used as the basis for three vasoprotective drugs prescribed by physicians since 1950.

Masquelier was the pioneer in this field. His research has been systematically documented by Bert Schwitters, the renowned author of numerous books and articles on health and nutrition topics. In his books *OPCs in Practice* and *A Lifetime Devoted to OPCs and Pycnogenols,* all research results have been collected and presented in a manner which even a layperson can easily understand: a comprehensive presentation of all the scientific literature on

OPCs. I am grateful to Bert Schwitters. He granted me access to essential information. And I am deeply grateful to Professor Masquelier himself, an outstanding scientist and wonderful teacher, who answered my questions with the utmost patience.

Now let us embark on a thrilling voyage to the substances that may revolutionize our health: OPCs for living longer in good health.

Anne Simons

Part I – The French Paradox: Living Longer Through Red Wine

Regular red wine consumption prolongs your life

In 1979, the Welsh researcher A.S. St. Leger published an article in the renowned medical journal *The Lancet*, describing the connection between the mortality rate in industrialized countries and wine consumption. He came to the amazing conclusion that those countries did best where the most red wine was consumed – Italy and, ranking first, France. And this despite the fact that the French eat a fairly fatty diet and are heavy smokers. This paradox has come to be known as the "French Paradox".

Results achieved by the large-scale Copenhagen study in 1995 were even more precise. In a comprehensive series of tests, Danish researchers concluded that regular wine consumption was the best protection against cardiac death and other fatal diseases. The risk of dying from a heart attack or stroke was reportedly reduced by sixty percent in the case of wine drinkers.

The French Paradox was also confirmed by a ten-year study called MONICA, which was commissioned by the World Health Organization to systematically compare the incidence of coronary heart disease on an international level starting in 1985. Countries such as France, Spain, Italy and Switzerland, where wine was consumed in relatively large quantities, showed the lowest mortality rate for coronary heart disease.

Is there an explanation for the French Paradox? Is alcohol genuinely healthy or is the decisive, relevant impact on our health due to other factors? As a matter of fact, alcohol as such has a "blood-diluting" effect with beneficial consequences for the risk of infarction. It inhibits aggregation, i.e. the "clotting" of blood platelets (thrombocytes) and thus reduces the likelihood of thrombosis. But this effect lasts only for a short period sub-

sequent to alcohol intake. Then the so-called “rebound effect” manifests itself, a reversal that occurs about 18 hours after alcohol consumption. The blood platelets become even more coagulable, resulting in an increased risk of blood clotting.

The only exception is red wine: although it is an alcoholic beverage, there is no danger of the rebound effect. On the contrary, when a moderate amount of red wine is regularly consumed, the blood contains less fibrinogen, the blood-clotting fibrous substances. Clots that have already formed are furthermore dissolved. This is an important factor in the prevention of heart attacks and strokes.

In contrast to other types of alcohol, the rebound effect does not manifest itself with red wine. What does red wine have that other alcoholic beverages don’t?

It was not by chance that the French scientist Jack Masquelier finally succeeded in making the path-breaking discovery of these sought-after substances known as OPCs, which provide red wine with its health-supporting and life-prolonging properties. After all, Masquelier’s homeland is the Bordelais, the region where the most delicious Bordeaux wines are produced.

OPCs are natural vegetable substances existing in a variety of fruit, in tree bark, skins and seeds, including grape seeds.

The history of the discovery of OPCs will be presented in more detail in the following chapter. Only this much shall be revealed at this point: it proves how frequently major discoveries are based on chance. The discovery of OPCs, the substances that I will discuss here, however, has one peculiarity, which renders them hard for the researcher to detect: they are colourless.

Red wine contains considerable quantities of OPCs

Wine is made from grapes, whose skins and especially seeds, like other fruit, contain large quantities of OPCs. But why does only red wine contain OPCs and not white wine, which is made from grapes as well?

This mystery is solved when you compare the methods by which the two types of wine are produced. White wine is made from the juice of grapes. The grapes are pressed and the juice is collected and fermented until it turns into white wine. The seeds and skins are removed immediately after pressing.

In the case of red wine, on the other hand, the seeds and skins are fermented in the juice for a period of two to three weeks. During this time, the red pigments contained in the skins of the red grapes and the OPCs found primarily in the seeds can gradually dissolve in the wine. They lend the wine its red colour and enrich it with the substances that are responsible for the protective effect of red wine. Thus it becomes understandable why white wine is 20 to 50 times less rich in OPCs than red wine: in white wine, OPCs do not have the opportunity to pass from the seeds and skins into the juice, since they are discarded immediately after pressing.

The various protective effects of red wine can certainly be attributed to its phenolic substances, to OPCs. Moderate, regular consumption of red wine lowers the cholesterol level, has an antioxidant effect, stimulates the secretion of gastric juices, protects the teeth against caries, prevents inflammation, has an antibacterial effect, protects the heart and circulation and prolongs life.

Are those who do not drink any red wine condemned to malnutrition because they are likely to ingest insufficient quantities of OPCs?

Fortunately, this question can be negated, because a protected production method has been developed to harvest OPCs from pine bark and grape seeds. They are available in high concentration capsules or tablets.

Important Notice : The substance referred to in this book as OPCs exists in the same form in nature; it is produced in high concentration, through a patented process by Professor Masquelier. As there are less effective ways to obtain OPCs, I urgently advise you to acquire a product that conforms to the high quality standard according to Masquelier's patent. Research is based on this substance.

Multiple reactions: Manfred K. 62, Poessneck[1]

I was always convinced that my diet was balanced and healthy. But then, ten years ago, I started taking OPCs (100 mg daily) as well as a compound of minerals, vitamins, and trace elements. My body's strong positive reaction revealed that I had obviously suffered from a deficiency before. I would never have thought it possible that these nutrients, which I have taken on an empty stomach every day since, could have such an extraordinarily favourable effect on my body.

Just three days after I started taking them, my bowel movements normalized. Now I hardly ever have flatulence. After about two weeks, I noticed I was physically much more able, especially in my sporting activities, like dancing, cycling, Nordic walking, swimming and winter sports. I hardly ever need my ten-minute afternoon nap, and I sleep well without waking up in the night. As to my libido, I am going through my second adolescence. My blood values have improved considerably, bleeding stops sooner although I am on blood thinners, and wounds heal faster now.

I am also free from pain now. Due to my profession – I am a master painter – I suffered from periods of pain in my right shoulder joint for over 15 years. An orthopaedist treated me with injections for the pain and an operation had already been planned. But now I am completely without pain. The pain caused by a slipped disc 22 years ago has also disappeared.

The food supplements have affected my appearance, too. I used to have lots of age spots, especially on the back of my hands, but also on my head and back. Now they have nearly completely disappeared.

My hair is more voluminous, and the wrinkles around my eyes and mouth are disappearing.

Finally, after taking OPCs for about four months, I am able to read the newspaper without glasses for the first time in 26 years, provided there is sufficient light. With my new vitality and agility, I am back to the weight and firm, flat stomach of my youth.

Part II – OPCs: The Discovery of a Wonderful Remedy

A glance back in history: rescue from death through scurvy

It is well known that in past centuries sailors were exposed to a major risk of contracting scurvy. For months they would be on the high seas. Their diet consisted of hard tack and salted meat since fresh fruit and vegetables were, of course, unavailable. But those who did not consume any fresh fruit or vegetables for more than two months either died or were terribly crippled.

Scurvy was the dreaded disease resulting from such a lifestyle. Malnutrition was the cause of bleeding gums and loss of teeth, changes in the bone structure, increased susceptibility to infection, haematoma, tissue destruction and, in the worst case, death from exhaustion. It is now known that the body's vitamin C reserves last about six weeks.

There are numerous examples from history confirming the mercilessness of an insufficient supply of vitamins. If the sailors deprived for months of fresh food were lucky, they ended up as hollow-eyed, toothless wrecks with crooked legs. When sailing around the Cape of Good Hope in 1498, Vasco da Gama lost almost two thirds of his crew to the fatal disease, which was more horrifying than the idea of shipwreck and a life and death struggle with stormy waves. This is the reason why sailors called it "the gruesome disease".

Another example of the destruction of the body due to vitamin C deficiency, in which a miraculous rescue occurred at the last moment, is the expedition of the French explorer Jack Cartier. His journey brought him and his crew of one hundred sailors to North America, today's Canada, in the winter of 1534/35. During several expeditions, he explored the St. Lawrence

Bay, the Quebec area and sailed upriver into the interior of the country. He was surprised by a sudden cold spell. The river froze over trapping Cartier and his men to spend the entire winter there – a fatal situation for the crew. The logbook gives the details of this horrible winter: their gums receded to such an extent that they lost their teeth. Their breath was bad. The legs of some men became swollen, lost strength, turned black and failed them. Their skin turned blotchy. And finally they died. One corpse was dissected, since the helpless captain hoped to find the reason for the mysterious disease. They found a white, decomposing heart surrounded by red fluid ...

After 25 men had already died and another 15 were in critical condition, a native Indian came to their rescue. He directed Cartier to a tree, which he called "Anneda", and explained how to concoct a tea from its bark and needles. The men who drank this liquid recovered within one week! They were recommended to put a poultice of the decoction on the afflicted body parts. In this way, the remaining crew managed to survive.

Cartier's encounter with the Indian shows that such life-saving measures in the struggle against the disease were a matter of luck. It took quite some time before vitamin deficiency was systematically diagnosed as the cause of the disorder. At least the benefits of oranges and lemons for the prevention of the deficiency disease were discovered in the 18th century by the British navy doctor James Lind. These could be taken on voyages. It was, however, only at the beginning of the 19th century that lemon juice became a regular daily component of the fare of British sailors. And only in the 20th century was it possible to isolate the ingredient of lemon juice responsible for preventing scurvy: anti-scurvy acid or rather ascorbic acid, today generally known as vitamin C.

On the track of vitamin C

In 1928 vitamin C was first isolated by the Hungarian scientist Albert Szent-Györgyi, who nine years later was awarded the Nobel Prize for this accomplishment. On closer scrutiny, ascorbic acid does not really deserve

its name, since tests showed its pure synthetic form to be less effective against scurvy symptoms than the substance extracted from lemon peels ("citrin") or other raw materials such as peppers, which contain various ingredients in addition to vitamin C. One of life's ironies: Szent-Györgyi discovered vitamin C; but he actually spent his entire life looking for something different: OPCs. These colourless and thus long undiscovered substances are the co-factor of vitamin C, which the Nobel Prize winner never succeeded in identifying.[2]

The discovery of OPCs

Professor Jack Masquelier's discovery of OPCs actually was a coincidental by-product of his doctoral thesis on the red pigment in peanuts. At the end of the Second World War, food was scarce and a lot of imagination was required to optimally utilize existing raw materials. Thus, Masquelier was assigned to determine whether the red skin surrounding the peanut underneath the shell contained any poisonous substances. The peanut residues, remaining after pressing peanut oil, were interesting both as animal fodder and for the starving people of the post-war period. Since some farmers complained that their cattle obviously did not like this fodder, it was necessary to find out about its potential toxicity.

Masquelier arrived at the conclusion that the red peanut skin did not contain any poisonous substances. In addition to the red substance, he identified other, colourless ingredients, which provided strong vascular protection: OPCs.

These OPCs obtained from peanut skin were applied to humans. The first test person was the pregnant wife of Masquelier's doctoral advisor, who suffered from oedema in her legs. An oedema is an accumulation of tissue fluid between the cells due to an increased permeability of lymph and blood vessels. Only 48 hours after she had ingested the OPCs, the woman was cured – this provided the impetus for the intensive development of the first

vasculo-protective medication based on OPCs. The drug was introduced to the French market in 1950 under the name “Resivit”.

For better understanding: OPCs – a few biochemical notes

Based on their pure chemical structure, OPCs could be categorized as flavonoids, but this classification is of little help since the range of this group of vegetal constituents is extremely broad. With respect to their biological utilization in the body and their level of toxicity and efficacy, the various flavonoids have highly diverging properties.

Thus, Professor Masquelier suggested a new categorization. He wanted to place less emphasis on the rather meaningless group of flavonoids and instead concentrate on the group of flavanols.

What does the abbreviation “OPCs” stand for?

Oligomeric procyanidins are stable compounds of two, three, four and occasionally even five flavan-3-ol molecules, i.e. oligomeric (Greek: *oligo* = several) procyanidins: OPCs[3]. An individual flavan-3-ol molecule is called a “monomer”. If two of these molecules combine, they form a “dimer”, and three flavan-3-ol molecules constitute a “trimer”.

Monomers on their own are not biologically active. But once they combine to form dimers and trimers, i.e. oligomers, they become effective. The term “procyanidin” refers to the fact that OPCs are colourless, but will turn red or blue under certain circumstances. Masquelier gave this group of substances its own name: “pycnogenols”.

OPCs belong to the large group of vegetal substances known as polyphenols. This term comprises many different groups, including flavonoids and flavanols, which has resulted in considerable terminological confusion. OPCs have repeatedly been incorrectly referred to as flavonoids or bioflavonoids. They are, however, flavanols. For laymen, this differentiation may seem rather obscure, but it must be observed that the two groups have more differences than common features:

Their only similarity is the flavane nucleus in their chemical structure. But otherwise, they differ in many respects: Flavonoids are not biologically active, whereas OPCs are 100% bioavailable, i.e. they can be completely used by the body. Some flavonoids have a toxic effect, whereas OPCs are completely harmless. In contrast to flavonoids, OPCs bond with proteins, especially collagen. Furthermore, flavonoids are yellow, whereas OPCs are colourless.

Thus, OPCs are highly specialized flavanols that are related but not equivalent to non-bioavailable tannins, which are contained in many foodstuffs such as vegetables, fruit juice, red wine, beer, cocoa, vinegar. The latter have an anti-viral effect, but remain in the digestive tract due to their molecular size. They do not enter into our blood circulation. This has been known for a long time, since tannins are effective remedies for diarrhoea.

The significance of OPCs for humans

The range of OPCs' efficacy

1 Vessels

a) Legs (extremities): prophylaxis/retardation/treatment of:

– venous insufficiency

– starburst varices

– heavy legs

– venous congestion

– varicose veins

– varicose ulcers

– cold feet (and hands) – chronic tingling sensation in legs

– "formication"

b) Blood circulation: *regulation and strengthening* of:

– cardiovascular system

– peripheral blood flow

and prophylaxis for:

– stroke

– heart attack

– arteriosclerosis/atherosclerosis

c) Other vascular problems: *prophylaxis/retardation/treatment of:*

– lymphatic congestion

– haemorrhoids

– thrombosis (aggregation)

– sensitivity to changes in weather (permeability)

– oedema

2 Allergies: *prophylaxis and treatment of*:

– hay-fever (pollen, grass, trees)

– allergy

3 Eyes: *prophylaxis/retardation/treatment of:*

– cataracts

– macula degeneration

– decreasing vision

– age-related sensitivity to light

– night blindness

– conjunctivitis

– "dry" eyes

– glaucoma

4 Rheumatism, etc: *prophylaxis/retardation/treatment of:*

– arthritis

– rheumatic disorders, in general

– gout

5 Skin/collagen: *prophylaxis/retardation/treatment of:*

– wrinkle formation

– premature tissue wrinkles in organs

– burns, sunburn

– acne, eczema

– neurodermatitis

– psoriasis

– cellulitis

– stretch marks (pregnancy)

Regulation and strengthening of:

– skin elasticity

– elasticity of toenails and fingernails

– wound healing (acceleration)

– dry skin

– scar formation

– collagen repair

6 Premature aging (antioxidant effects): *prophylaxis/retardation/treatment of:*

– Alzheimer's disease

– Parkinson's disease

– MS

– senility

– weak memory

7 Respiratory tract: *prophylaxis/retardation/treatment of:*

– rhinitis (runny nose)

– bronchitis

– asthma

8 Injuries: *subsequent to injuries and surgery: detoxication and accelerated healing of:*

– fractures, strains, tendons

– muscular injuries , wounds in general

9 Diabetes:

– strengthening of weakened tissue

– revitalization in the case of fatigue

10 Blood lipids: regulation of cholesterol

11 Female disorders: PMS (premenstrual syndrome)

12 CFS (Chronic Fatigue Syndrome): revitalizing and strengthening in the case of fatigue

13 Concentration: *(phrophylactic) treatment of:*

– hyperactivity, especially in children

– learning disorders

– concentration disorders in elderly people and children

– reduced responsiveness, especially in elderly people

14 Vitamin booster: increased efficacy of vitamins (A, C and E), minerals and trace elements

15 Immune system: *general boosting*: resistance toward flu and cold

16 Libido: *strengthening of:*

– erectility

– ability to reach orgasm

17 Osteoporosis:

– stabilization of the collagen grid

– improved calcium synthesis

18 Inflammation: *positive effect on all diseases ending in „-is" and „-itis", including*

– arthritis (joint inflammation)

– gastritis (inflammation of the gastric mucosa)

– hepatitis (liver inflammation)

– meningitis (inflammation of the brain membrane)

– periodontitis (gum inflammation)

– sinusitis (sinus inflammation)

This lengthy list confirms the importance of sufficient OPCs intake for our health, especially for blood and lymph vessels, eyes, general and psychic well-being and vitality as well as for the immune system.

How can the various effects of OPCs on the entire organism be explained?

– OPCs are strong antioxidants that effectively fight the dreaded free radicals and thus constitute a protective factor against cell damage. They can actually be described as the strongest **antioxidants**. Their antioxidant effect is 18 to 20 times stronger than that of vitamin C and 40 to 50 times stronger than that of vitamin E.

– OPCs regulate the cholesterol level in the blood.

– OPCs strengthen blood vessels and thus prevent cardiovascular disorders. Since, in contrast to vitamin C, they bond with protein, particularly with collagen and elastin, they are able to double the resistance of blood and lymphatic vessels within 24 hours.

– OPCs improve blood circulation in the entire body and have a positive effect on vision, connective tissue, joints, mucous membranes, etc.

– Under the influence of OPCs, stress can be more easily tolerated.

– Memory is strengthened.

– Aging processes are slowed down: wrinkles form less rapidly, since the skin and underlying tissues remain supple and elastic longer.

– OPCs prevent caries.

– Arthritic inflammations as well as sports injuries heal more rapidly if OPCs are ingested.

– OPCs prevent allergic responses.

An impressive list, which makes the heart beat faster in view of the promising prospect of a long life in health and beauty!

Multiple allergies: Manuela M., 29, Eschbach

Since I started working as a hairdresser at the age of 15, I have had multiple allergies, primarily to chemicals in cleaning agents, hair dye, perfumes, rubber, latex, etc. Various treatments, e.g. at the dermatological clinic of the University of Freiburg, didn't help. Cortisone injections and ointments were no use. I kept suffering from open wounds on my hands and arms. Since August 2004 I have taken OPCs (200 mg per day with a body weight of about 70 kg). I got better within four weeks. The open wounds closed and my skin has stopped itching.

Open leg ulcer, varicose veins: Thomas H., 39, Allgaeu

For many years I suffered from an open leg ulcer that would not heal despite manifold treatments (traditional medicine, homeopathy, leeching and vitamin B12 injections). Because of this, two years ago my sister-in-law recommended OPCs and a combination of micronutrients which she herself had found helpful. I decided to try it and took 400 mg of OPCs plus micronutrients daily. For the first month it got worse and the wound discharged a lot of pus. To my relief, it started healing after that. I gradually lowered the dosage to 200 mg of OPCs daily.

However, I continued to suffer from bad varicose veins so that a light blow sufficed to injure my leg and open it up again. Even though these wounds healed very quickly, I decided in the end to have the varicose veins removed in an operation.

This turned out to be the right decision. After the operation I took 400 mg of OPCs daily, which accelerated the healing process. Now I am back to 200 mg. My leg has healed completely and is perfectly sound.

Stroke: Monika K., 60, Waibstadt

Four years ago I had a stroke and my left side was paralyzed. For fourteen days I was completely immobile, incontinent, unable to speak, my sight was blurred, and I had bowel problems and trouble swallowing. In addition, tests showed I had hepatitis B. What bothered me the most, however, was that I was not able to understand a lot of things anymore.

I took various drugs for hypertension and diabetes and blood thinners. At the rehabilitation sanatorium I gradually improved due to water gymnastics and Reiki.

Although I slowly learnt to read texts again, I had difficulty in understanding their meaning. I tired quickly, but sleep brought no relief and my memory was bad. For a long time, I could not grasp things and could only walk on crutches. I also had trouble making myself understood, as I spoke slowly and swallowed syllables. I suffered from flatulence and had permanent bowel problems. Due to incontinence, I needed diapers.

The turning point came two and a half years later. In August 2005 I started taking OPCs (400 mg daily). I noticed a quick improvement to my general condition. Five months later I began to reduce my medication. Now I haven't taken anything for five months and yet my blood values have continually improved, especially the blood sugar levels.

Now all those troubles have nearly completely disappeared. I can walk without crutches again and even dance. My major problems have vanished. I can concentrate and remember things now. I have no problem understanding connections and I can articulate much better. I even have about 98 percent of my former strength in my right hand. Even if I occasionally have flatulence, I feel infinitely better and am happy. People can see this, for they keep telling me that I look much younger than last year. I feel like I have been given a second life.

“Healthy diet”?

The discussion about a healthy diet, which is now in all the media, makes us more and more aware of its importance for our health. But we find that industrial methods of production are frequently responsible for foodstuffs losing their vital nutrients during processing. Canned fruit is, for example, deprived of its peel. Even those who assume that consuming fresh fruit ensures an optimal provision with vital substances may err. It depends on the fruit. Only totally ripe fruit is replete with OPCs, while unripe fruit contains only very small quantities. Providing a whole society with fruit necessitates premature harvesting: transport, packaging, distribution and purchase by the final consumer take time. When buying fruit and vegetables, consumers should pay close attention to the degree of ripeness. Unripe fruit does not fulfil the expectations that diet-conscious consumers have for fresh food.

Our body does not produce OPCs or vitamin C itself. It is dependant on a regular intake of both substances. Now you may wonder why we cannot simply ingest OPCs with our regular diet, since they are contained in so many plants. The answer is simple: they are widely distributed in nature, but are mostly found in barks, shells, peels and woody parts which we tend to remove before we eat fruit. Thus, even people who set great store by a healthy diet can suffer a shortage of OPCs. The additional ingestion of OPCs to supplement our regular diet is therefore sensible. Moreover, OPCs are only found in tree or bush ripened fruit. In times of mass production, however, fruit is often picked before it is ripe and allowed to “ripen” during transport. This prematurely harvested fruit contains hardly any OPCs.

OPCs extraction

The bark of the pine tree *Pinus maritima,* which is native to Les Landes, a region south of Bordeaux, contains huge quantities of the required substances. So OPCs were extracted from pine bark and processed into an-

other vasoprotective medication called Flavan. In extracting OPCs from pine bark, Masquelier strove for an optimal ratio between raw material and obtained extract. During the extraction process, as high a concentration of OPCs as possible should be obtained from a given quantity of pine bark.

Due to the extremely high water solubility of OPCs, the ground bark is first dissolved in boiling water, a process closely resembling tea preparation. In addition to OPCs, other water-soluble substances dissolve. In order to obtain the highest possible concentration of OPCs, Masquelier developed a procedure whereby the proportion of OPCs and OPCs precursors ranged between 85 and 90 percent. Catechin, another substance, which is also water-soluble, is contained as well. But this is not a disadvantage. On the contrary, the presence of OPCs activates the catechins, thereby enabling their beneficial properties to develop. Thus, this process generates a highly potent flavanol mixture, the phytonutrient OPCs.

The preparations produced according to Professor Masquelier's patented process are unique in their efficacy since they guarantee an extremely high OPCs content as well as catechins and contain hardly any tannins, which are not bioavailable. In the case of products not manufactured according to the patented Masquelier method, the OPCs proportion may drop to a few percent and they may contain numerous substances that are not bioavailable (see "Qualitative Features").

In 1955 Masquelier succeeded in proving that the identical OPCs molecules which he extracted from peanut skin and pine bark are also contained in red wine – and that these flavanols by far exceed flavonoids, such as rutin, with respect to their vasoprotective properties.

Now the question is where else flavanols exist in nature. Answer: in many plants which we consume every day, such as fruits and vegetables, and in those whose healing properties we already know in other contexts, such as ginkgo biloba, mistletoe, hawthorn, as well as in the bark of certain trees, such as the Australian tea tree, as was illustrated in the historical examples previously described.

The mysterious rescue of Cartier's crew through the bark and needles of the Anneda tree can today be easily explained by Masquelier's insights. The bark of the Anneda tree is obviously rich in OPCs, while the needles contain high amounts of vitamin C. Thanks to this unbeatable team, the sailors obtained an effective remedy, which saved their lives despite their extremely poor physical condition.

In the industrial extraction of a natural substance, the ratio between expenditure and yield is decisive. Masquelier focused on the production of OPCs from pine bark and grape seeds, since they have a tremendously high concentration of OPCs and, furthermore, are so-called "by-products". Pines are not felled for the production of OPCs, but in order to manufacture paper and to obtain timber. Thus, the bark is "left", as are grape seeds, which are a by-product of juice and wine production.

Qualitative features

OPCs are predominantly taken from the bark of *Pinus maritima* and primarily from the grape seeds of *Vitis Vinifera*, but it would be wrong to equate OPCs with pine bark or grape seed extracts. Vitamin C is not equivalent to orange juice and OPCs are not identical with grape seed extract. The latter term can be applied to any substance gained from grape seeds, whereby the OPCs content may be minimal. Like vitamin C, which is obtained according to standardized methods of production, OPCs are pure substances that can be gained from pine bark and grape seed as well as from many other plants.

In the USA "grape seed extract" headed the list of dietary supplements in 1996, 1997 and 1998. But unfortunately, this is not only good; they should have been more precise. Every successful natural remedy attracts countless charlatans and crooks, and this applies particularly to OPCs products.

In 1997, an independent laboratory in Chelmsford, Massachusetts, examined the antioxidant properties of three grape seed and pine bark products

produced according to Masquelier's method, as well as ten other "grape seed extracts" sold on the U.S. market.

The result: the three preparations which were produced according to Masquelier's patented process contained at least 85 percent OPCs and their components (i.e. active substances) and turned out to be potent and biologically effective remedies. This patented OPCs product is the only preparation where OPCs have been scientifically studied over many years. "Masquelier's OPCs" have been tested according to strict guidelines, have been deemed beneficial, have been patented (in various countries) and have even been recognized as medical ingredients in pharmaceutical products in France. There they still are, more than 50 years after their discovery, the active substances most frequently prescribed for the treatment of vascular fragility.

In the independent laboratory test in Chelmsford mentioned above, the other grape seed extracts – with one exception – all had rather poor results. Some did not contain any OPCs whatsoever, others only a minimal amount.

OPCs' bioavailability to the body

In order to be recognized as a medication, a substance is subject to extremely strict and comprehensive controls and must fulfil a number of criteria, including "bioavailability". What is bioavailability?

The vital ingredients which we ingest with food are resorbed in the various sections of our digestive system, i.e. they pass the barrier of gastric and intestinal walls and are then absorbed by the blood vessels and transported to all parts of the body.

This process happens in varying degrees. Some substances are resorbed only poorly, others not at all, which means that they are not available to the body as nutrients.

A substance which is ingested but is then discharged from the digestive tract is of hardly any use to the body. It is not bioavailable. Thus, we can

obviously only benefit from the miraculous properties of a substance if our body can actually use it.

How can the bioavailability of a substance be determined?

Proof of OPCs' bioavailability was furnished by means of radioactivity. Vines cultivated in the laboratory were exposed to minuscule concentrations of radioactivity. Their grape seeds were processed into OPCs extract and orally administered to laboratory animals – rats, mice and guinea pigs. After a certain period of time an x-ray revealed that the OPCs had spread throughout the entire body: from the intestines they had passed into the blood stream and could be traced in all tissues, including skin, hair, nails as well as various organs. This meant optimal bioavailability of the OPCs substance that had been dissolved in water. An especially high concentration of OPCs could be detected in the aorta, the walls of the duodenum, liver, bronchial tubes and skin, as well as in the cartilage of the sternum, spleen, glands, lungs, plasma, cardiac muscle, muscles and blood.

OPCs immediately pass into the blood stream. Only ten minutes after ingestion, OPCs could already be detected in the blood of the laboratory animals. The rapid availability of a substance is, of course, of particular importance in emergencies, such as allergic attacks. The highest concentration was reached after 45 minutes, and then the level gradually dropped. After seven hours, it still ranged at about one third of the maximum level. OPCs are discharged to a small degree (14 percent after eleven hours) via the bile, i.e. via the intestines.

OPCs and vitamin C - an unbeatable team

The importance of vitamin C for a well-functioning organism has already been discussed. It influences almost all our metabolic processes. In contrast to most animals, humans are unfortunately not able to produce this indispensable vitamin themselves. They must ingest it with food. Linus Pauling, the great vitamin C researcher, examined how much ascorbic acid is pro-

duced by animals and then deduced the quantity of ascorbic acid required by humans, depending on age, weight and size. He arrived at a significant maximum of 18 g per day, a dosage that considerably exceeds general guidelines. Normally a daily quantity of about 100 mg is recommended.

With his book on vitamin C published in 1970, Linus Pauling, who was awarded the Nobel Prize twice, triggered a vitamin C boom. From then on many people followed the megadoses that he recommended and expected a life-prolonging, cell-rejuvenating and resistance-boosting effect – and quite rightly so. Pauling himself, who took 12 g of vitamin C daily, was a very healthy man until his death at the ripe old age of 93 years. Small wonder in view of the incredible protective functions that this vitamin carries out for the organism!

Protective properties of vitamin C:

– It is indispensable for growth, especially for the formation of collagen, which is contained in bones, cartilage, skin, tendons, sinews and tissue as scleroprotein. It safeguards the elasticity and health of said structures and provides protection from infections.

– Ascorbic acid is a tremendously effective antioxidant which prevents the dangerous free radicals (see further on) from destroying body cells. It also saves other vitamins, such as certain B-vitamins, vitamin A and E, from oxidation.

– Vitamin C is involved in the production and/or activation of red blood cells, defence cells, folic acid and hormones.

– Vitamin C absorbs carcinogenic nitrates and nitrites and thus performs an anti-carcinogenic function.

– It is responsible for transporting iron in the blood and providing sufficient oxygen for the cells.

– Vitamin C is indispensable for healing wounds and maintaining healthy blood vessels.

What Pauling did not know: he might have been able to reduce the dosage of vitamin C and at the same time achieve an even higher efficacy for his body, since OPCs are substances that greatly boost the effect of vitamin C.

Let us refresh our memories: Albert Szent-Györgyi, the Hungarian discoverer of vitamin C, was actually searching for the co-factor of vitamin C. Research had shown that pure synthesized vitamin C was less effective in fighting scurvy than vegetal extracts, e.g. from lemon peels, which contain other substances in addition to vitamin C. Thus, he assumed that one of these substances supported vitamin C and that the combination of the two would have a particular healing effect. He was, however, not able to determine which substance it was.

This evidence was finally furnished in 1976 by Masquelier and his colleagues within the framework of a path-breaking study. In various contexts, it had become obvious that OPCs multiplied the effect of vitamin C. One example was the lowering of the cholesterol level by OPCs, an effect that was significantly increased by the intake of vitamin C.

How could the assumption that OPCs were the sought-after co-factor of vitamin C be corroborated? Masquelier performed an experiment with guinea pigs, which was as simple as it was impressive. These animals belong – like primates and some kinds of bats – to the few species that are not able to synthesize vitamin C and – like humans – are dependant on ingesting a sufficient amount through their food.

An impressive experiment: The guinea pigs were divided into five different lots and furnished with varying quantities of vitamin C. The higher the daily dosage of vitamin C, the more vigorous the animals were and the longer they lived. The amazing result of this examination was that those animals that were given a low quantity of vitamin C, i.e. 5 mg per kilo of body weight per day, as well as an additional dosage of OPCs were in as good a condition as those that had been provided with a sufficient quantity of vitamin C, that is 20 mg of vitamin C per kilo of body weight per day.

Thus, OPCs act as a vitamin C booster, which ensures survival even if the body is not provided with enough vitamin C. As a matter of fact, the amount of vitamin C required drops to one tenth under the effect of OPCs.

According to this calculation, Linus Pauling would have needed only 1.2 g of ascorbic acid instead of his daily dosage of 12 g if he had supplemented it with OPCs, and would still have enjoyed excellent health and vitality as he got older.

Now the question arises which substance supports the other: do OPCs boost vitamin C or vice versa? This question can be answered quite easily. Both substances enhance one another. By administering vitamin C, the remedial properties of OPCs are intensified, while the beneficial properties of vitamin C are multiplied by OPCs. In both cases, healing processes are initiated and/or accelerated. In combination, OPCs and vitamin C are an unbeatable team!

Are OPCs vitamin P?

Let us remember the example of the wife of Masquelier's doctoral advisor whose oedema healed within two days after ingesting OPCs. Or, looking even further back, think of the dreaded scurvy, which Cartier's crew narrowly escaped, thanks to the Anneda tree. The typical symptoms of scurvy include the disintegration of the body's tissue if no fresh fruit and vegetables have been eaten over an extended period of time. As it was impossible to refrigerate certain foods or preserve their freshness in any other way, seafarers took dried meat, cereal and, of course, liquor on their voyages. In the 18th century, the situation improved for British sailors when a navy doctor discovered the connection between citrus fruit and scurvy prevention. But it was only in our century that the discovery of vitamin C revealed the reason for this connection.

Vitamins are organic compounds required by the body in order to sustain vital processes. Since vitamins (with the exception of vitamin K and, by

daylight, also vitamin D) are not produced by the body itself, we have to ingest them via our food. The lack of certain vitamins in the body results in deficiency symptoms.

Some vitamins can be stored in the body over a fairly long period, but eventually these deposits are depleted unless we replenish them with appropriate vitamins from our food. Regular vitamin intake from outside is indispensable.

Possibilities for storing vitamins:

– B_{12}: up to five years

– A: up to two years

– E: six to twelve months

– D and folic acid: two to four months

– C, B_2 and K: two to six weeks

– B_1: maximum of two weeks

– OPCs: 72 hours

Some experts regard OPCs as a vitamin, specifically vitamin P, which is responsible for the permeability of the capillaries, the extremely fine branches of the blood and lymphatic vessel system. Thus, the following statement can be found in a scientific study published by the pharmaceutical faculty of Bordeaux University: "Flavanol oligomers are practically the only source of vitamin P in our food. [...] They are easily soluble, completely bioavailable, non-toxic, non-mutagenic [i.e. they do not cause any hereditary changes in the genetic material] and non-carcinogenic [cancer producing]. They [...] have a justified claim to vitamin status."[4]

Vitamin P is responsible for reducing capillary permeability. In addition, it has inflammation-inhibiting and anti-allergic properties.

When is a vitamin a vitamin?

A vitamin is defined as a non-mineral compound minute quantities of which are vital for the organism. The body cannot produce this substance itself, so that it must be supplied through food. After a certain period, the lack or insufficient supply of a vitamin results in known deficiency symptoms: a vitamin C deficiency is responsible for scurvy; a vitamin D deficiency causes rickets; the lack of certain B vitamins produces beriberi etc. Allergies, susceptibility to infection, digestive problems, lack of concentration and many other disorders can frequently be attributed to a deficiency of vital substances.

In this respect, the discovery of vitamin C was a major achievement, for which Szent-Györgyi certainly deserved the Nobel Prize. However, as already mentioned, tests showed that pure synthetically-produced ascorbic acid was less effective in fighting scurvy than when the substance was ingested in the form of fruit, where it is combined with other substances. "Citrin", a mixture of substances extracted from lemon peels, is a more potent vaso-protector than pure vitamin C. Because of its effect on vascular permeability, the scientist called citrin "vitamin P".

A substance is granted the status of a vitamin only when evidence can be furnished that the lack of it results in deficiency symptoms in the body. This was never proven by Szent-Györgyi. As a matter of fact, it is very probable that OPCs are the sought-after vitamin P and were just not noticed due to their small size and lack of colour.

Open wounds, connective tissue, varicose veins: Lisbeth W., 47, France

For some months I've been taking OPCs every day and have had good experience with it. For several years again and again I had open wounds on the groin and horrible itching. After I started taking 2 x 100 mg OPCs/day the wound healed within a week and the itching was gone. I used to have cracks on my fingers and heels, but since taking OPCs this has stopped. On the whole, my skin has become supple and soft. Since my problems went away, I've been taking 100 mg per day.

My connective tissue has tightened a lot. I've had six children, therefore a "wobbly" stomach, and I weighed ten kilograms more than before my pregnancies. Within four months I've lost four kilos and my stomach has become firm. I don't have cravings since I started taking OPCs together with a vitamin mineral compound. Even my vagina has tightened a lot. My husband says that I'm like a virgin.

I don't feel my varicose veins anymore.

OPCs – protection for all blood and lymph vessels

OPCs are substances that protect blood and lymph vessels. How do they manage to do this?

Since OPCs can bond with proteins, they attach to collagen and elastin, components of the vascular wall. Both are so-called scleroproteins of the connective tissue. Collagen is, moreover, present in sinews, cartilage and bones. The task of collagen and elastin is to build vascular walls and keep them strong and supple. By attaching to these two proteins – which vitamin C is not able to do – OPCs activate their synthesis and metabolism and prevent their premature decay.

Many people know the term "collagen" from cosmetic products that promise skin regeneration and smoothness through application of creams containing collagen. As two essential constituents of the vascular wall, collagen and elastin ensure its elasticity and permeability. Collagen can be thought of as a type of track with regular cross-links or as a ladder with rungs connecting the two supports. The lateral parts consist of protein chains, polypeptides that are intertwined. Of great importance for the stability and elasticity of these chains is the number of rungs if we want to stay with the simile of the ladder. If they break, the connective tissue becomes weak and permeable. At the spots where rungs have broken, there are gaps where blood and lymphatic fluid leak into the surrounding tissue, resulting in haematoma, oedema and dropsy.

But the opposite is not desirable either. Under the influence of free radicals, crossed rungs develop, which make the connective tissue rigid, resulting in premature wrinkles. This development, however, is regulated by OPCs, which are potent antioxidants and thus effective scavengers of free radicals.

This is why Professor Masquelier regards OPCs as the vitamin of the vascular wall – vitamin P.

Weak bladder: Alexa B., 51, Sulz a/N.

After giving birth to my daughter, I suffered from a weak bladder, which despite regular pelvic floor exercises grew worse and worse. Twenty years later I had come to the point where I could not move anymore without being afraid of "accidents". I was therefore willing to have an operation on my urethra. Thanks to a friend who advised me against such an operation because of the numerous complications, I postponed it for a while – until I finally realized that the problem no longer existed. In the meantime, I had started taking OPCs (a daily dose of 200 mg with a body weight of 50 kg). I am convinced that taking OPCs regularly freed me from my bladder trouble.

How do you know that your vascular walls are weakened?

– If your gums bleed when you brush your teeth, if hardly noticeable pressure, pinching or nipping results in haematoma,

– if you are terribly tired in the evenings although your day has not been that strenuous,

– if you frequently notice some blood in your cornea, if water tends to accumulate in your legs and arms in warm weather or

– if your legs feel tired and swollen in the evenings,

you probably suffer from weakened or hypersensitive vascular walls, which can be strengthened by taking OPCs.

Sense of smell, skin, spider veins, cellulitis: Claudia H., 46, Verl

For six months I've "enjoyed" OPCs enthusiastically! Thanks to this high quality antioxidant (200 mg daily with a body weight of 59 kg) I have

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regained my sense of smell. For two years I wasn't able to smell or taste anything between 9 pm and 9 am (and sometimes even longer). My skin has improved considerably, and I've also noticed other improvements in many little things, i.e. fewer spider veins and less cellulitis. I was absolutely amazed and overjoyed to realize that a tiny wart that I had had for many years wasn't there anymore.

The decrease in my spider veins has made me aware that also all the other, invisible vessels in my body are strengthened and protected. This "inner care" makes me feel good and secure regarding my future health. As a preventologist I've studied healthy diets and diet supplementation and I am very grateful to have found out about OPCs.

Application, side effects and dosage

In the many years of scientific research on OPCs, no side effects have been detected. OPCs are not poisonous, but healing and beneficial in many respects. They are a remedy that maintains or restores health. Thus, they can be used both as a medication and as a dietary supplement to prevent disease. Studies performed by the Pasteur Institute confirm that OPCs are not toxic, not carcinogenic (cancer producing) and not mutagenic (altering the genetic material). Long-term ingestion of a dosage of 35,000 mg (!) per day over a period of six months did not result in any negative consequences to the organism.

Nevertheless, one aspect should be mentioned: Since OPCs activate the vitamin C supplies in the body and harmonize blood flow, they may occasionally result in an increased excretion of toxic substances deposited in the organism (heavy metals, herbicides, pesticides, etc.). This process may cause an initial feeling of indisposition, which will, however, disappear after about a week and is usually followed by a noticeable increase in vitality.

Recommended **dosages**:

– If OPCs are taken as a dietary supplement in order to maintain health and well-being, the recommended daily dosages range from 1 to 2 mg per 1 kg of body weight. Thus, a person weighing 50 kg should take 50 to 100 mg per day. In stressful situations, the quantity can be doubled.

– If OPCs are used as a therapy for certain health problems, the dosage may be significantly higher. Scientific literature reports studies where up to 500 mg were administered per day without any noticeable interaction with other drugs or side effects. These dosages were administered in the treatment of varicose legs, retinopathy, PMS, sports injuries and post-surgical oedema.

Some facts about OPCs

– Within minutes OPCs are absorbed into the blood through the oral and gastric mucosa and transported to all body tissues.

– After a few minutes, they can already be detected in the blood.

– They are 100% bioavailable.

– They are water-soluble.

– They reach their highest concentration in the blood after about 45 minutes. They are completely used up in the body within 72 hours.

– Due to their small molecular size, OPCs – like vitamin C – pass the blood, brain and spinal cord barrier and unfold their remedial properties also in regions that are not reached by most other substances.

– The resistance of blood vessels doubles already 24 hours after ingesting OPCs.

From a chemical and biological viewpoint, OPCs are clearly of major importance for the human organism. The body cannot produce these substances itself but requires them to sustain vital functions. We have seen that there are good arguments for regarding OPCs as a vitamin, and that

their vital substances are indispensable for vascular health. The list of deficiency diseases resulting from lack of OPCs is long and alarming.

Periodontosis with jawbone degeneration: Anne L., 42, Munich

Around my 40th birthday, I experienced a health crisis which manifested itself primarily in a dramatic recession of my gums and jawbone degeneration. Although I was afraid of losing all of my teeth within a few years, I underwent complete dental restoration and had all amalgam fillings replaced by gold crowns. Tests showed that I had high concentrations of mercury in my body. In addition, I also underwent jaw surgery, so-called "open curettage", and was fastidious in oral hygiene. Despite all these efforts, it was hard to maintain a healthy state, I frequently responded to stress with painful gum inflammation and noticeable gum recession.

After I had started taking OPCs, I gradually began to feel better. The condition of my gums stabilised. And then an x-ray that my dentist took of two teeth revealed an amazing fact: the bone, which had already half-degenerated, was again clearly visible on the x-ray. Five of us compared old x-rays with the new one: There was no doubt that my jawbone had regenerated in this spot. My dentist could not explain this phenomenon; we had already discussed the option of implanting bone from my hip in the jaw …