



Champagne Extract

CHARDONNAY GRAPE HYDROGLYCOLIC EXTRACT

PRODUCT IDENTIFICATION

INCI name (EU) : Aqua
Propylene Glycol
VITIS VINIFERA

CAS no. : 7732-18-5
CAS no. : 57-55-6
CAS no. : 84929-27-1

BOTANICAL DATA



Latin name : *Vitis vinifera*

Family : N.O. Vitaceae

Between 898 and 1825 the kings of France were crowned in Reims, in the heart of the Champagne region in east of France (Marne area). The name Champagne derives from the Latin «campus», «campania» or field. In Old French this became «Champaign» and today, Champagne.

Pliny documented viticulture in the Marne as early as 80 A.D., but fossil evidence exists showing that wild vines flourished naturally in the area round Reims and Epernay over a million years ago.

As well as developing the vineyards and the art of winemaking, the Romans also quarried the chalky hillsides up to three hundred feet deep, in search of chalk blocks for building. These chalk pits are called «crayeres» and have since become cellars for millions of bottles of Champagne.

In 92 A.D. the Emperor Domitian decreed that most of the vineyards of France should be uprooted to eliminate competition with the wines of the Italian peninsula. The vines of Champagne were no exception. For two centuries the vineyards were cultivated secretly, until the Emperor Probus rescinded the decree and ordered the vineyards to be replanted.

The sparkling wine is the result of an accident. Most «vin gris» in France was drunk young ; but when shipped abroad in cask, the warm spring weather frequently set off a secondary fermentation, still underway when the wines arrived. Through trade with Spain and Portugal, the cork stopper was already in common use in England for ales. These delicate new wines were bottled immediately upon their arrival, and retained, in more or less haphazard fashion a lively sparkle. The phenomenon aroused considerable academic and commercial interest on the part of the «Champenois». The first French documents that refer to Champagne date from 1718. These papers report that the first time this happened was around 20 years earlier (bringing the date to circa 1698).



The French version of the history is that the first successful, deliberate methods of capturing the bubbles in the bottle were due to the combined efforts of two monastic orders :

Under the inspired direction of their respective cellar masters, Frère Jean Oudart (1654 – 1742) and Dom Pierre Pérignon (1639 – 1715), the abbeys of Saint-Pierre aux Monts de Châlons and Saint-Pierre d'Hautvillers became the birthplace of naturally sparkling wine in its most perfect form. The two abbeys were barely two miles apart and it is likely that these two contemporaries consulted each other.

Champagne is a blending of grape varieties. The main are the Pinot Noir and the Pinot Meunier, black grape with a white juice, and the **Chardonnay** a white grape. The black Pinot Noir and Pinot Meunier give the wine its length and backbone. However most Champagnes are made from a blend of **Chardonnay** and Pinot Noir, for example 60 %/40 %, and the “Blanc de Blanc” (white of white) Champagnes are made from 100 % Chardonnay.

Also **Chardonnay** can be regarded as the main grape variety use to produce the French Champagne.

ACTIVE INGREDIENTS

The ripe fruit juice of **Chardonnay** contains :

- * sugar,
- * gum,
- * malic acid,
- * potassium bi-tartrate,
- * inorganic salts, and
- * PROCYANIDOLIC OLIGOMERS that are plant molecules distinct from flavonoids and constituted of derivatives of catechin and epicatechin called procyanidolic oligomers (dimers, trimers) (Bibliography * 1).

Over the pentamers, the polymerisation of these derivatives leads to the condensed tannins.

Degree of polymerisation	Usual name	Molecular weight
High	Phlobaphens	High
	Condensed tannins	> 3 000
	Tannins	> 1 500
Weak	Procyanidolic Oligomers	< 1 500

The PROCYANIDOLIC OLIGOMERS have a basic structure of the flavane type and are composed of low polymers (not more than 8 polymeric units) consisting in various arrangements of (+)-catechin and (-)-epicatechin.

O.P.C. are not isolated chemical compounds but vegetable extracts and, for this reason a structural identification study of the grape seed O.P.C. was conducted. As shown, polymerised derivatives may present a wide structural diversity :

MONOMERS :

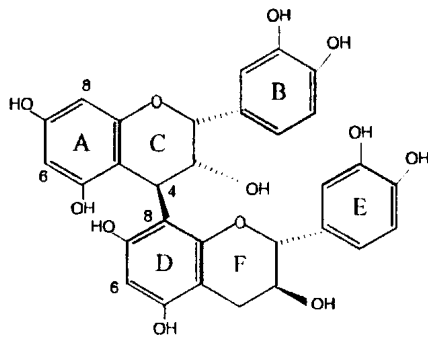
They are (+)-catechin, (-)-epicatechin, and (-)-epicatechin-3-O-galloyl.

DIMERS :

Four dimers, all from the B classification and with an interflavanic bond involving C4-C8 carbons, have been identified. They are respectively B1, B2, B3, B4. The regioisomers (*Another type of isomerism that is produced as a result of the different outcomes of chemical reactions in which there are different orientations or sites to choose from*) with a C4-C6 bond described in the literature and which are respectively B5, B6, B7, B8, probably exist as traces.

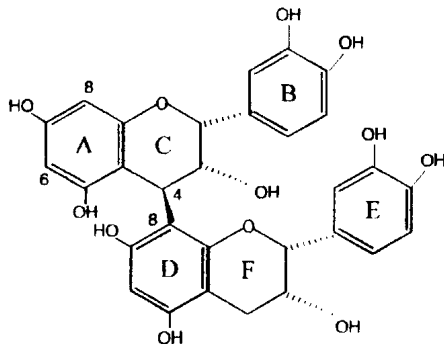
The isolated and identified compounds represent about 50 % of the O.P.C. extract.

Dimeric proanthocyanidin with (+)-catechin and (-)-epicatechin:



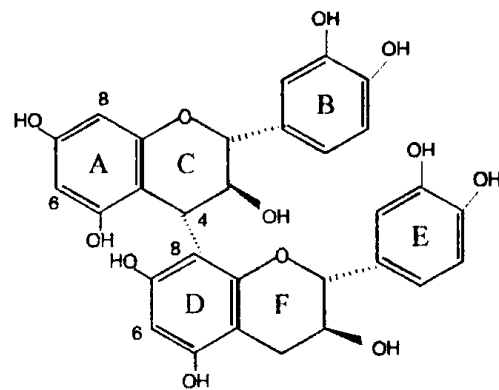
Proanthocyanidin B1

Dimeric proanthocyanidin with two (-)-epicatechin units:



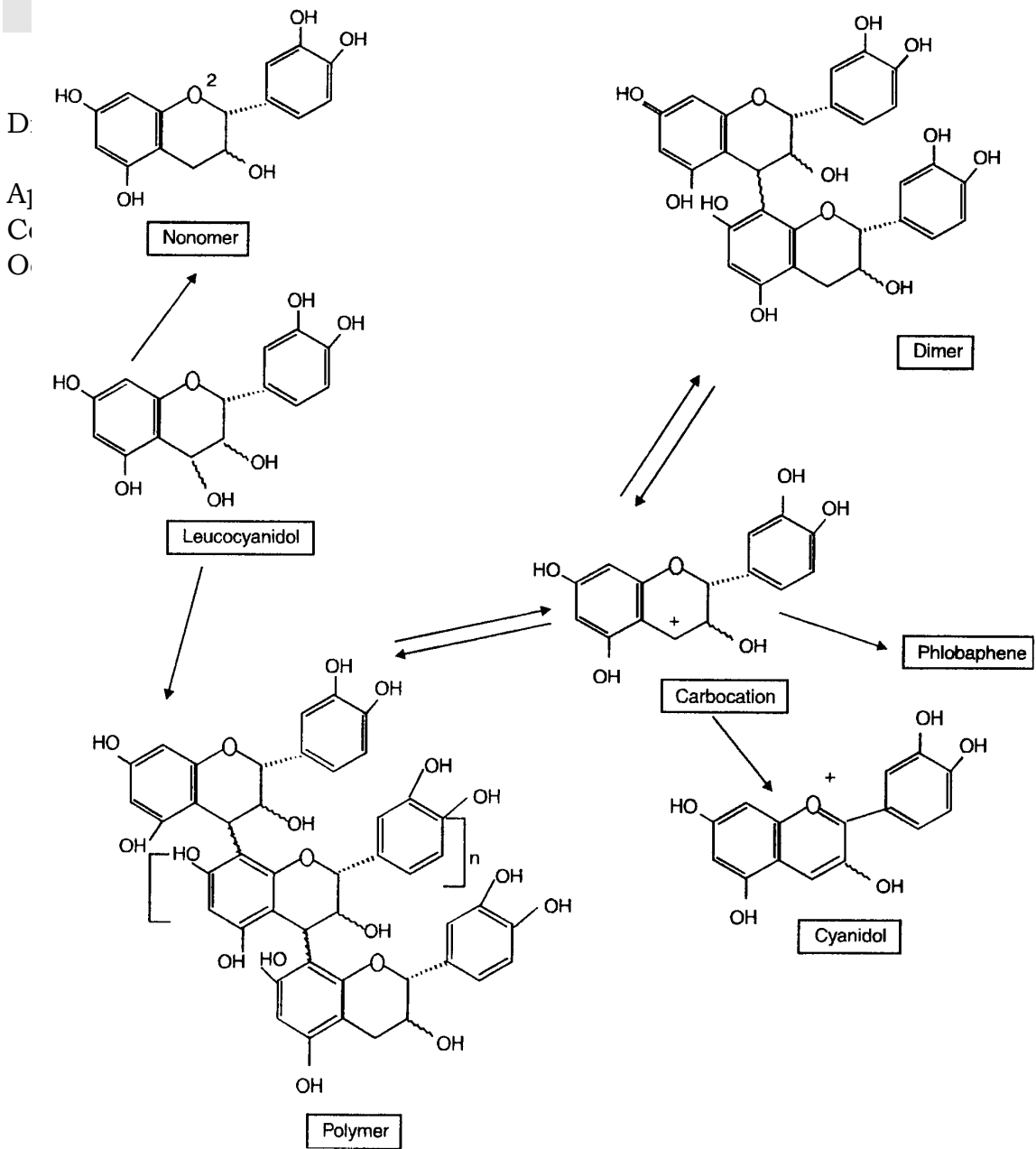
Proanthocyanidin B2

Dimeric proanthocyanidin with two (+)-catechin units:



Proanthocyanidin B3

PROCYANIDOLIC OLIGOMERS



Plant/Extract ratio	1/1
pH (direct)	5 ± 1.0
Density at 20°C	1.040 ± 0.010
Refractive index at 20°C	1.385 ± 0.010
Pesticides	0.2 ppm max.
Heavy metals	0.3 ppm max.
Solubility	In water and alcohol 60°
Identification of O.P.C.	Positive
Preservation	Phenonip 0.25 % m/m
Total germs	< 100/ml
Yeasts and moulds	< 100/ml
Pathogens	Absence

COSMETIC APPLICATIONS

In 1970, Professors Michaud and Masquelier proved the existence of PROCYANIDOLIC OLIGOMERS (dimers, trimers, tetramers of catechin, epicatechin) and their physiological role ; they are the substances responsible for the vitamin P activity.

This activity appears on vascular walls by a regulation of the permeability and a higher capillary resistance due to the affinity of these molecules for the collagen and the glycoproteins, which constitute the arterial walls.

PROCYANIDINS will form new links between collagen chains, which enhance the solidity of the arteries and veins tonicity.

It will also play a role in glycoprotein protection. Once the macromolecules are synthesised, they are under control of depolymerising enzymes such as collagenase, elastase and hyaluronidase. The role of these enzymes is to help maintain these substances in the requisite polymeric degree, so that they can fulfil their functions.

One year after Dr. Masquelier announced the scavenging effect of PROCYANIDOLIC OLIGOMERS, the medical school of Nagasaki, Japan, confirmed this finding.

In 1987, Japanese biochemists demonstrated that a DIMER PROCYANIDIN they had isolated, would exercise an action 50 times superior to that of a vitamin E, then considered as reference.

Due to their molecular structure, the PROCYANIDINS will catch free radicals and protect cellular structures. It will reinforce the natural defence system of the organism against free radicals (superoxide dismutase, vitamin E) and help it to fight the ageing process.

APPLICATIONS

- ▶ Sun-care products, to protect the skin from UV rays and free radicals produced under exposition to the sun,
- ▶ Creams and lotions, to improve the microcirculation at the surface of the skin and fight against superficial effects of ageing.

Face and body care products (creams, milks, gels)	1 - 5 %
Bath and shower gel	5 - 10 %

TOXICITY

Oral toxicity	Not toxic
Skin irritation	Not irritant
Skin sensitisation	Not sensitising

STORAGE

In a tightly closed container, at room temperature (20°C), away from light, heat, and humidity sources.

BIBLIOGRAPHY

BRUNETON. Pharmacognosy, Phytochemistry medicinal plants. Ed. Lavoisier PARIS, FRANCE

GRIEVE, A Modern Herbal. Ed. Tiger LONDON, UK

(* 1) MANÉ C, SOUQUET J. M., OLLÉ D., VERRIÉS C., VÉRAN F., MAZEROLLES G., CHEYNIER V., & FULCRAND H., Optimization of Simultaneous Flavanol, Phenolic Acid, and Anthocyanin Extraction from Grapes Using an Experimental Design : Application to the Characterization of Champagne Grape Varieties, J. Agric. Food Chem., 2007, 55 (18), 7224 -7233, FRANCE :

« *Optimisation of polyphenol extraction from grape skin, seed, and pulp was performed on *Vitis vinifera* L. cv. Pinot Noir, by response surface methodology using a Doehlert design. An acidified mixture of acetone/water/methanol was the best solvent for simultaneous extraction of major polyphenol groups from all berry parts, while optimum extraction times and solid-to-liquid ratios varied according to the part. The determined composition from the model agreed with independent experimental results. Analysis of the three **Champagne grape varieties showed that proanthocyanidins were the major phenolic compounds in each part (60-93%)**. The total berry proanthocyanidin content was highest in Pinot Meunier (11 g kg⁻¹) and lowest **in Chardonnay (5 g kg⁻¹)**, but Pinot Meunier pulp contained lower amounts of proanthocyanidins and phenolic acids (210 and 127 mg kg⁻¹ berry, respectively) than that of the other two varieties. The berry anthocyanin content was equivalent in both Pinot Noir and Pinot Meunier (632 and 602 mg kg⁻¹, respectively).* »

PARIS & MOYSE. Matière Médicale I, II, III. PARIS, FRANCE