

QUALTECH GROUPE

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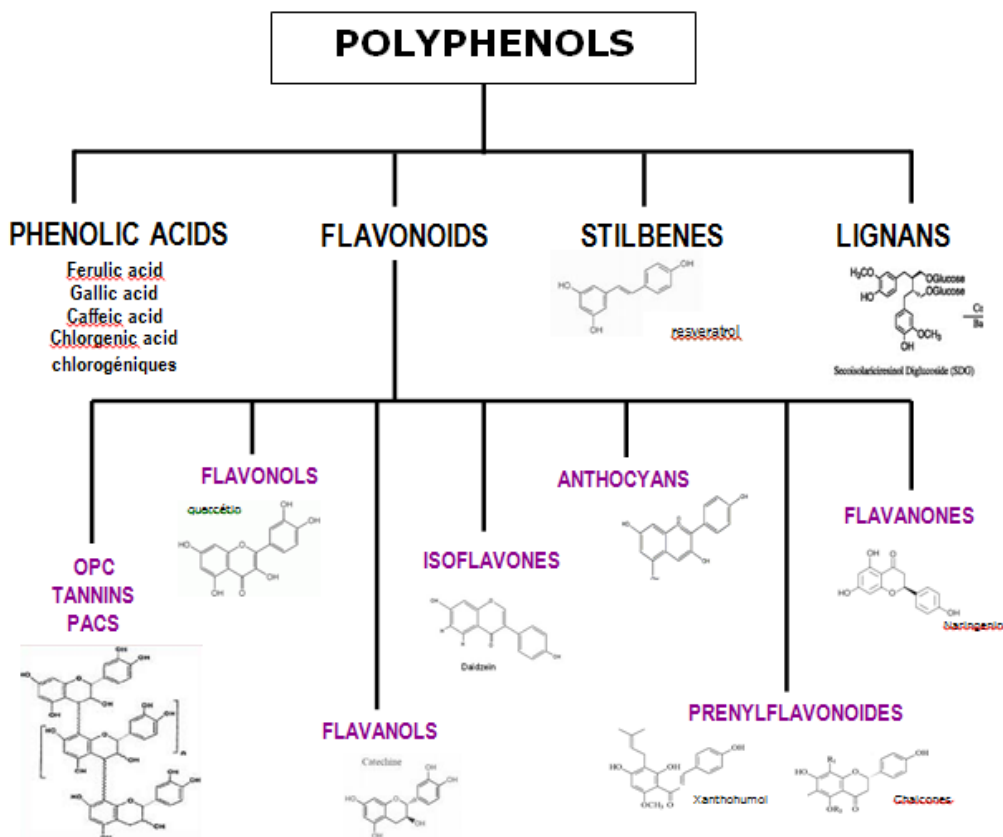
POLYPHENOLS ANALYSIS

Polyphenols are molecules synthesized by vegetables and which belong to their secondary metabolism. They participate in the defence of plants against environmental attacks.

Called phytomicronutriments, they are regrouped in a class of about 8000 compounds divided into several categories.

We count 4000 flavonoids in the vegetable kingdom. Flavonoids are classified according to their degree of oxidation.

Polyphenols are becoming increasingly important, especially because of their beneficial effects on the health. Indeed, their role of natural antioxidants is generating more and more interest for the prevention and the treatment of cancer, inflammatory, cardiovascular and neurodegenerative diseases. They are also used as additives for the food, pharmaceutical and cosmetic industry.



PHENOLIC ACIDS

FERULIC ACID

MATRIX EXAMPLES :

Cereals, wheat, rice and rye

PROPERTIES: antioxydant, fights against oxydative stress

CHLOROGENIC ACIDS

MATRIX EXAMPLES :

Coffee, artichoke, potatoes...

PROPERTIES: antioxydants, role in prevention of cardiovascular diseases and diabetes type II in vitro

FLAVONOÏDS

OLIGOMERES PROCYANIDOLIQUES (OPC)

MATRIX EXAMPLES:

Grape seeds, extract of maritime pine, Hawthorn, cocoa, cinnamon...

PROPERTIES :

Antioxydants action from 20 to 50 times more important than vitamins C* and E*

Active in hydrosoluble and liposoluble environments

Protection of free radical attack

Constituted by same motive, catechin*, repeated 3 times, beyond, they are called tannins or PACs.

PROANTHOCYANIDINS OR PACS OF CRANBERRY

PROPERTIES:

Anti-bacterial properties: bacteria cannot stick to tissue hosts, whether it is bladder, teeth or stomach.

The anti-adherence of PACs contained in cranberry is different from that of PACs that we find in grape juice, green tea or cocoa. In fact, studies showed that cranberry contains more PACs and antioxidants than all other fruit eaten usually.

FLAVANOLS

MATRIX EXAMPLES :

Tea, cocoa, grape seeds...

PROPERTIES:

Natural antioxydants can replace synthetic antioxydants

Added value to cooked products = « health » products

Anticancerous properties especially due to the presence of the EGCG (EpiGalloCatechin Gallate) and the other by-products of catechin*: epicatechin, epicatechin gallate, epigallocatechin...

FLAVONOLS

MATRIX EXAMPLES :

Onion, apple, broccoli, red berries

PROPERTIES:

The quercetin is the most active flavonols as antioxidants: antihistamine, anti-inflammatory drug and antioxidant.

Kaempferol: role in the prevention of the cardiovascular diseases

Isorhamnetin: antioxidant properties

PRENYLFLAVONOIDS

MATRIX EXAMPLES: Beer and hops

PROPERTIES :

Prenylflavonoids of hops are localized at the intracellular level and are secreted with fatty acids and essential oils. They are separated in two sub groups: flavonones (xanthohumol) and chalcones (8 prenyl-naringenin).

Xanthohumol: Very toxic substance for cancer cells, anti-proliferative effects, antioxidant effects and on the lipid metabolism

8 prenyl-naringenin: Very powerful phytoestrogen (more important than isoflavones).

FLAVANONES

MATRIX EXAMPLES:

Citrus fruit : orange, lemon, grapefruit, mandarin, bitter orange

PROPERTIES:

Flavanones neutralise free radicals
They improve the absorption of vitamin C
These polyphenols would have a role in the prevention of the skin cancers

ISOFLAVONES

MATRIX EXAMPLES: Soya

PROPERTIES:

Phytoestrogen properties are brought by isoflavones, molecules which possess a similar structure to steroid oestrogens.

Source of phytoestrogens most studied in women

It is possible to optimize the phenolic contents of the soya extract by making it germinate or by letting mushrooms such as *Rhizopus oligosporus* or *Lentinus edodes*.

ANTHOCYANES

MATRIX EXAMPLES:

Bilberry, blackberry, black grape, aubergine, plum

PROPERTIES:

Properties against the ageing cellular by improving the skin elasticity and density.

We find mostly anthocyanins under their glycosyl shape (anthocyanidins) in particular forms 3-O-glucosides and 3-O-rutinosides of delphinidin and cyaniding. It's possible to separate all the existing forms by HPLC.

STILBENS

MATRIX EXAMPLES:

Wine, blackberries and peanuts

PROPERTIES:

Resveratrol is a phytoalexin produced by a lot of plants following a pathogenic infection. It is a molecule which presents a strong interest in its defence against cancer, an antiviral effect, a neurodefender, anti-ageing or even as anti-inflammatory

LIGNANS

MATRIX EXAMPLES:

Flax seeds

PROPERTIES:

Flax seeds notably contain SDG, secoisolariciresinol-diglucoside, which we do not find in a free state in the seed, it is part of a natural chemical complex. So that these phytoestrogens become active in the human body, they have to be at first metabolized by the intestinal bacteria.

Lignans act on the cholesterol rate, on symptoms of menopause and on the prevention of osteoporosis after the menopause.

