Keywords

Pomegranate
Antioxidant,
Cardiovascular,
Healthy body weight

Summary

PoliNat offers a range of Pomegranate extracts looking to preserve the totum of the fruits, as in the famous P40P, and not only ellagic acids which is finally in a very small amout in the fruits.
From the seeds, they extract punicic acids, studied then for healthy body weight.

Pomegranate

The pomegranate (Punica granatum) is a fruit-bearing shrub or small tree that has been cultivated over the whole Mediterranean region and the Caucasus since ancient times. In the Northern Hemisphere, the fruit is typically in season from September to January while in the Southern Hemisphere, the season runs from March to May. The name itself derives from the Latin pomum (apple) and granatus (seeded) (Lloyd, 1897).

there is a great interest in the scientific community in the properties of pomegranate, which is considered by many as a functional food because it has valuable compounds in different parts of the fruit displaying beneficial effects on health such as antioxidant, antitumoral , antihepatotoxic , antimicrobial, anti-inflammatory, antiviral, antidiabetic and improving cardiovascular, oral, and skin health. However, few well-controlled clinical trials have been completed and these effects have not been solidly established (Viuda-Martos, 2010).

Pomegranate P40P

P40p™ is a unique product, carrier free, soluble in water and is standardized to a full spectrum of all of the essential compounds responsible for specific health promoting benefits of pomegranate juice, manufactured under strict GMP procedures.

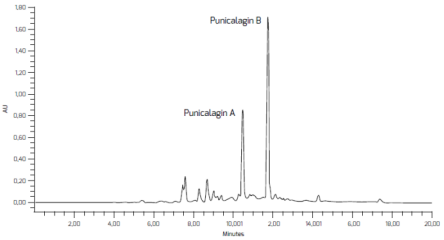
The P40p™ extract is standardized to 40% punicosides with a minimum concentration of 30% punicalagins. Additionally, P40p™ guarantees a total polyphenol content of no less than 50% (Table 1). The final product is free of yeast and bacterial contamination, allergens, gluten, BSE, GMO and irradiated products. P40p™ is Kosher certified and suitable for vegans.

Approximately, 30 mg of P40pTM provides an equivalent amount of bioactives than 50 ml of pomegranate juice.

Total Punicosides (HPLC)	**≥ 40%**
Punicalagins A & B (HPLC)	**≥ 30%**
Total Polyphenols (Spectrophotometry)	**≥ 50%**

PoliNat has been extracting Pomegranate in their GMP Silliker plant located at Las Palmas for years. They presently offer different grades :

- **Pomegranate P40P** brings bioactives compounds as punicosides and punicalagins A+B (strong antioxidant), and other polyphenols, carrier free : cardiovascular, antioxidant. Also some research on prostate health and joints.
- **Pomegranate seed oil** for body weight - also used in their patented Xanthigen – and antioxidant, contains Punicic acid, fatty CLNA.
- **Pomegranate POE** brings 40% Ellagic acid but not only since it also provides other polyphenols found in pomegranates, namely punicalagins a and b.



HPLC "fingerprint" chromatogram (P40p™) showing the high content of punicalagins.

Chemical Profile

P40P™

The key bioactive compounds in pomegranate fruit are a group of hydrolizable ellagitanins generically called punicosides, including punicalins, punicalagins (A+B), ellagic acid glycoside and ellagic acid. Ellagic acid is commonly used to standardize commercial pomegranate extracts but this approach is unreliable, potentially misleading and vulnerable to adulteration (Zhang, 2009). Punicalagins have been identified as being responsible for most of the antioxidant activity present in the pomegranate fruit (Gil, 2000) and represent a more reliable means of standardization of commercially produced pomegranate extracts (Jimenez Del Rio, 2006).

Animal studies have shown that both ellagic acid and punicalagins are absorbed by the gastrointestinal track after oral ingestion of pomegranate juice or extract, with the concentration of the latter being higher. Punicalagins are not absorbed *in vivo* directly but reach the colon and release EA that is metabolised by the human microflora (Larrosa, 2006).

Cardiovascular Health

Atherosclerosis is a collection of patchy plaques (called atheromas) in medium-sized and large arteries. These plaques contain lipids, inflammatory cells, smooth muscle cells, and connective tissue. Several investigators have studied the influence on cardiovascular health of pomegranate supplementation.
They have measured how pomegranate affects several markers involved in the development of atherosclerosis, such as plasma lipid profiles, lipid-oxidation status, platelet aggregation, interaction between macrophages lipids, and stress to the arterial wall.

More recently Rosemblat has also confirmed that pomegranate juice daily consumption improves plasma lipid oxidant profile in patients with diabetes by reducing lipid peroxide and cellular peroxides and increasing glutathione levels, factors that all contribute to development of atherosclerosis in these patients (Rosemblat, 2006).

Cancer

Cancer is an unregulated proliferation of cells which lose their normal controls, resulting in unregulated growth, lack of differentiation, local tissue invasion, and, often, metastasis. Dozens of information (angiogenesis, apoptosis, cells differentiation and signaling) gathered on cellular cultures and animal models have been collected.

Pantuck et al found that daily supplementation with pomegranate juice (PJ) led to a significant decrease in tumor progression in patients with prostate cancer that had undergone surgery or radiotherapy. They were able also to confirm in in vitro investigations that PJ induced apoptosis and decreased cell proliferation (Pantuck, 2006)

Pomegranate Seed Oil

Pomegranate seed oil (PSO) is rich in Punic Acid (PA) and contains other actives such as ellagic acid, other fatty acids and sterols (Schubert, 1999; Amakura, 2000; Abd El Wahab, 1999). Polinat manufactures PSO with at least 80% content of PA.

Punicic acid

Punicic Acid (PA) is structurally related to Conjugated Linolenic Acid (CLNA), and their potential beneficial biological effects (for instance significant decrease in hepatic tryacylglycerol deposits, as well as levels of monounsaturated fatty acids).

In fact PA has been found in animal models to accumulate in liver and perirenal fat, increasing serum levels of tryacylglycerol and phospholipids, which suggest PA mobilizes fat out of their storage sites into the blood (Yamasaki, 2006), corroborated later on in ICR CD-1 mice.

At the molecular level, investigators have found that PA activates a class of receptors (PPARγ) also activated by oral antidiabetic agents, which in principle could play an important role in glucose homeostasis and obesity related inflammation.

In summary, PSO has shown beneficial effects on the lipid storage and lipid serum profile in obesity animal models with a strong suggestion that it may also help uncontrolled blood glucose levels.

Pomegranate Seed Oil in Xanthigen™

Xanthigen™ is a nutraceutical combination product intended for weight management, partly based on PoliNat's PSO. In a clinical trial, investigators found that PSO acted synergistically with a fucoxanthin, increasing the resting energy expenditure (REE). Increase in REE leads to losing weight (Abidov, 2010). More recently, investigators have reported that PSO can down-regulate the expression of adipogenic genes (PPARγ) in fat cells.