

# BeLite

The active ingredients contained in “BeLite” supplement, can support the characterization “Help for Any Type of Health Diseases Due to Obesity”. Every claim for the ingredients listed below is supported by scientific research results.

## **How to take:**

3 capsules per day.

## **Health Benefits**

### Malus sylvestris (Wild apple) extract

Apples are the most often produced and consumed fruits around the world. It is an important part of human diet and it is an excellent source of nutrients because of its biochemical composition. Extracts derived from *Malus sylvestris* have been studied for their potential health benefits, including their possible role in weight management and obesity prevention. Wild apple’s extract contains antioxidants, such as polyphenols and flavonoids, which can help combat oxidative stress and inflammation. Obesity is often associated with chronic low-grade inflammation, and antioxidants contribute in inflammation reduction. Some studies suggest that compounds in *M. sylvestris* extract may help regulate appetite and this can potentially lead to reduced calorie intake, which is crucial for weight management. Maintaining stable blood sugar levels is important for managing obesity and this extract may increase insulin sensitivity and glucose metabolism, which can aid in weight control. There is also some evidence to suggest that wild apple extract can influence lipid metabolism. More specifically, compounds of the extract might help the body break down fats more efficiently, potentially aiding in weight loss. Finally, the extract could act as a prebiotic, promoting the growth of beneficial gut bacteria. A balanced gut microbiome has been linked to better weight management and gastrointestinal health. Epidemiological studies have shown an inverse correlation between the consumption of apples and/or similar products and the risk of development of cardiovascular diseases, respiratory system dysfunction, prostate, liver, and colon cancer . To summarize, wild apples are not important only for their nutritional properties, but also for their traditional use in folk medicine. The major phytochemicals present in *M. sylvestris* comprise of catechin, quercetin, and chlorogenic acid, all with antioxidant activity.

Possessing antioxidant and anti-inflammatory abilities, these substances might participate in the prevention and treatment of many diseases, including disorders caused by oxidative stress and cell aging, cardiovascular or degenerative diseases, hypertension, atherosclerosis, osteoporosis, cancer, arthritis, type II diabetes, and others.

#### *Oryza sativa* extract

Rice, and especially black rice, is a good source of complex carbohydrates, fiber, vitamins, and minerals. These nutrients can support overall health, including maintaining energy levels and proper bodily functions. Lower glycemic index rice varieties, such as brown rice, can help regulate blood sugar levels and the extract can be beneficiary for individuals with obesity or those looking to manage their blood sugar.

#### *Emblica officinalis* (Amla or Indian gooseberry) extract

Treatment with *Emblica officinalis* (amla) is shown to be beneficial in mitigating hyperlipidemia, metabolic syndrome, hepatocarcinogenesis, and hepatotoxicity resulting from iron overload. The phytochemicals of amla, quercetin, gallic acid, corilagin, and ellagic acid were observed to exert hepatoprotective actions against toxicity of paracetamol, microcystins, galactosamine, and lipopolysaccharide. Amla appears to possess hepatoprotective effects by virtue of its antioxidant, anti-inflammatory, and hypolipidemic actions and by modulation of detoxifying enzymes. Some studies have suggested that amla extract may have a beneficial effect on lipid profiles, potentially helping to lower cholesterol levels. Amla's antioxidant and anti-inflammatory properties may have a positive impact on some of the risk factors associated with metabolic syndrome, such as insulin resistance and inflammation. Amla's antioxidant properties may also contribute to its potential protective effects against liver damage and certain types of liver conditions, including those associated with hepatocarcinogenesis (the development of liver cancer). Iron overload can lead to liver damage, and amla's antioxidant properties may help protect the liver from oxidative stress. However, more research is needed to establish clear connections.

Citrus aurantium (bitter orange) extract

C. aurantium contains compounds like synephrine that may act as appetite suppressants. Some people report reduced feelings of hunger and increased satiety when consuming products containing C. aurantium extracts. There are published suggestions that C. aurantium supplements can improve exercise performance and increase the metabolic rate, leading to more efficient calorie burning. Additionally, by increased thermogenesis and controlled adipogenesis, may promote the oxidation of fats, potentially helping the body break down and use stored fat for energy. Clinical study research also claims citrus family extracts to be a great first line of defense against mild hyperlipidemia, especially for individuals that cannot tolerate a statin therapy. Finally, research indicates that C. aurantium extracts display anti-inflammatory properties, which could be beneficial in managing obesity-related inflammation.

**The health claims of the product can be summarized in the table below, including a few indicative bibliography sources. Please note that the sources cited are only a fraction of the research results that corroborate the potential health benefits.**

Active Ingredient	Health Protective Claim	Sources
<i>Malus sylvestris</i> extract	Antioxidant, anti-inflammatory, liver protection, gut microbiome balance	1-8
<i>Oryza sativa</i> extract	Lipid level lowering	9-10
<i>Emblica officinalis</i> (amla) extract	antioxidant, anti-inflammatory, hypolipidemic actions and detoxifying enzymes modulation	11-13
<i>Citrus aurantium</i> extract	Controlling thermogenesis and adipogenesis, dyslipidemia treatment, anti-inflammatory	14-17

## Bibliography

1. Gogia, N.; Bukia, Z.; Atamashvili, T.S.; Esaiashvili, M.; Chkhikvishvili, I. The amount of polyphenols and antioxidant activity of fruits of different varieties of apple tree-*Malus domestica* L. *Georgian Med. News* 2015, 242, 84–88.
2. Bouayed, J.; Hoffmann, L.; Bohn, T. Antioxidative mechanisms of whole-apple antioxidants employing different varieties from Luxembourg. *J. Med. Food* 2011, 14, 1631–1637.
3. Denis, M.C.; Furtos, A.; Dudonne, S.; Montoudis, A.; Garofalo, C.; Desjardins, Y.; Delvin, E.; Levy, E. Apple peel polyphenols and their beneficial actions on oxidative stress and inflammation. *PLoS ONE* 2013, 8, e53725.
4. Du, W.X.; Olsen, C.W.; Avena-Bustillos, R.J.; Friedman, M.; McHugh, T.H. Physical and antibacterial properties of edible films formulated with apple skin polyphenols. *J. Food Sci.* 2011, 76, 149–155.
5. Makarova, E.; Gornas, P.; Konrade, I.; Tirzite, D.; Cirule, H.; Gulbe, A.; Pugajeva, I.; Seglina, D.; Dambrova, M. Acute anti-hyperglycaemic effects of an unripe apple preparation containing phlorizin in healthy volunteers: A preliminary study. *J. Sci. Food Agric.* 2015, 95, 560–568.
6. He, X.; Liu, R.H. Triterpenoids isolated from apple peel have potent antiproliferative activity and may be partially responsible for apple's anticancer activity. *J. Agric. Food Chem.* 2007, 55, 4366–4370.
7. Patocka, Jiri, et al. "Malus domestica: A review on nutritional features, chemical composition, traditional and medicinal value." *Plants* 9.11 (2020): 1408
8. Sugiyama, Hiroshi, et al. "Oligomeric procyanidins in apple polyphenol are main active components for inhibition of pancreatic lipase and triglyceride absorption." *Journal of agricultural and food chemistry* 55.11 (2007): 4604-4609.
9. Verma, Deepak Kumar, and Prem Prakash Srivastav. "Bioactive compounds of rice (*Oryza sativa* L.): Review on paradigm and its potential benefit in human health." *Trends in Food Science & Technology* 97 (2020): 355-365.
10. Macías, Francisco A., et al. "Bioactive steroids from *Oryza sativa* L." *Steroids* 71.7 (2006): 603-608.
11. Nazish, Iram, and Shahid H. Ansari. "*Emblica officinalis*–Anti-obesity activity." *Journal of Complementary and Integrative Medicine* 15.2 (2017): 20160051.
12. Baliga, M. S., et al. "Scientific Validation of the Hepatoprotective Effects of the Indian Gooseberry (*Emblica officinalis* Gaertn): A Review." (2013).
13. Sato, Ryuei, Lance Martinez Buesa, and Pratibha Vivek Nerurkar. "Anti-obesity effects of *Emblica officinalis* (Amla) are associated with inhibition of nuclear transcription factor, peroxisome proliferator-activated receptor gamma (PPAR $\gamma$ )." *The FASEB Journal* 24 (2010): 661-4.

14. Maksoud, Sawssan, et al. "*Citrus aurantium* L. active constituents, biological effects and extraction methods. an updated review." *Molecules* 26.19 (2021): 5832.
15. Victoria-Montesinos D, Abellán Ruiz MS, Luque Rubia AJ, Guillén Martínez D, Pérez-Piñero S, Sánchez Macarro M, García-Muñoz AM, Cánovas García F, Castillo Sánchez J and López-Román FJ: Effectiveness of consumption of a combination of Citrus fruit flavonoids and olive leaf polyphenols to reduce oxidation of low-density lipoprotein in treatment-naïve cardio-vascular risk subjects: A randomized double-blind controlled study. *Antioxidants (Basel)* 10: 589, 2021.
16. Giglio RV, Patti AM, Nikolic D, Li Volti G, Al-Rasadi K, Katsiki N, Mikhailidis DP, Montalto G, Ivanova E, Orekhov AN and Rizzo M: The effect of bergamot on dyslipidemia. *Phytomedicine* 23: 1175-1181, 2016.
17. Miwa Y, Mitsuzumi H, Sunayama T, Yamada M, Okada K, Kubota M, Chaen H, Mishima Y and Kibata M: Glucosyl hesperidin lowers serum triglyceride level in hypertriglyceridemic subjects through the improvement of very low-density lipoprotein metabolic abnormality. *J Nutr Sci Vitaminol (Tokyo)* 51: 460-470, 2005.

## **Data on the toxicity of the product**

### *Malus sylvestris* extract

Toxicity studies for wild apple extracts, determined the sublethal dose (LD<sub>50</sub>), to a minimum of 5.297 g/kg body weight daily dose. The extract was also tested for mutagenic capacity and does not show any mutagenic nor pro-mutagenic activity, under the test conditions used, supporting the current use as safe dietary supplement.

### *Oryza sativa*

Daily doses used in clinical trials range from 150 to 450 mg. Administration for 12 months of a 100 mg/kg dose did not result in pathological changes.

### *Emblica officinalis* extract

*In vivo* median sublethal dose or LD<sub>50</sub> of the extract was 1.125 g/kg BW. Other parameters such as body weight and survival rate showed no side effects or different results.

*Citrus aurantium extract*

In an 28-day toxicity test, with 300 mg/kg body weight and 2000 mg/kg body weight daily dosage , no clinical signs of toxicity were observed, as well as no deaths occurred. Body weight did not change significantly during the treatment; however, body weight gain was lower in groups treated with high doses of p-synephrine.

**This literature overview has been compiled upon request of SAPPARI HEALTH CARE COMPANY<sup>®</sup>, regarding specific nutritional supplements health claims. The sources used for this bibliography research are peer-reviewed published scientific data, for each ingredient.**

Tsolakou Annia  
MSc in Pharmacognosy and Natural Products Chemistry  
Research Group of Clinical Pharmacology and Pharmacogenomics  
Faculty of Pharmacy, School of Health Sciences  
National and Kapodistrian University of Athens