

DUOLIFE

# Berberine

Food supplement

**DUOLIFE Berberine** is a food supplement **from the Pure Formula line** containing berberine from barberry root extract in a concentrated dose. It is enclosed in capsules made of HPMC, an organic cellulose derivative, with delayed release time.

Barberry fosters the maintenance of normal blood cholesterol and glucose levels, supports the functioning of the digestive tract, including liver functions. It can also support the reduction of inflammations and the fight against the unwanted effect of free radicals.

Barberry extract found in the product is standardised to contain as much as 95% of HCL berberine. Thanks to standardisation, the amount of berberine in the product is guaranteed.



Simple, targeted composition



Product with comprehensible purpose



Convenient form of use



Naturally sourced ingredients

## When to use DUOLIFE Berberine?

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**DUOLIFE Berberine food supplement is intended for use as support for optimal body functions in the case of people:**

- ▶ wishing to keep normal blood glucose and cholesterol levels;
- ▶ people who want to keep normal blood cholesterol level;
- ▶ people who want to support the process of adipose tissue reduction;
- ▶ people who want to support liver functions;
- ▶ people who want to support the proper functioning of their digestive tract.

## How does berberis extract found in the DUOLIFE Berberine food supplement work?

**DUOLIFE Berberine** is a food supplement based on the barberry root extract, standardised to 95% HCL berberin content. Thanks to standardisation, the amount of berberine in the product is guaranteed.

Barberry extract found in **DUOLIFE Berberine** helps:

- ▶ maintain optimal blood glucose level;
- ▶ maintain optimal blood cholesterol level;
- ▶ body weight control;
- ▶ liver function;

- ▶ digestive system function;
- ▶ reduce inflammations in the body;
- ▶ antioxidative processes.

**i** **Instructions for use:** 2 capsules a day, with a meal. Do not exceed the recommended daily dose. The product should not be a substitute for a varied diet. A balanced diet and healthy lifestyle are essential for the proper functioning of the body.

**i** **It is beneficial to combine the DUOLIFE Berberine food supplement with:**  
ProCholterol®, ProSugar®, ProCardiol®, Shape Code® Slim Shake, ProSlimer®, DUOLIFE Chlorofil, DUOLIFE My Gastrin, other products from the DUOLIFE Pure Formula line.

#### Precautions

- ▶ Do not use if you are hypersensitive to any of the ingredients of the product.
- ▶ Do not use in children.
- ▶ Do not use in pregnant or breastfeeding women.
- ▶ If you have a chronic condition or are taking medication, consult your doctor before using the product.

**i** **Ingredients – content in a daily dose (2 capsules):** barberry (*Berberis aristata*) root extract, 2:1 (500 mg), standardised to 95% HCL berberine content (475 mg), anti-caking agent: silicon dioxide (from rice). Coating ingredient: hydroxypropyl methylcellulose (HPMC).

## Discover the ingredients of the DUOLIFE Berberine food supplement

### Barberry (*Berberis aristata*) root extract, 2:1, standardised to 95% HCL berberine content

***Berberis aristata***, also known as Indian barberry or tree turmeric, is a shrub with valuable properties, native to the Himalayan region of India. This plant contains several active compounds, the most valuable of which is **berberine**, which belongs to the group of alkaloids. Phytochemical screening has showed that *Berberis aristata* contains also other alkaloids – mainly yellow ones: oxyberberine, berbamine, aromaline, protoberberine alkaloid, karachine, palmatine, oxycantine and taxilamine, as well as tannins, sugar and starch.

Barberry was thoroughly tested for its numerous properties supporting the human body<sup>1</sup>. Multiple studies have shown that berberine (barberry's main active ingredient) may help **maintain optimal blood glucose level**<sup>2,3</sup>. It is linked with the support that this active ingredient gives during the process of enhancing the sensitivity to insulin and fostering its production. Berberine shows action similar to insulin, helping promote glucose uptake by body cells. It also supports the regeneration of pancreatic cells responsible for insulin production, thus help increase its concentration in blood. Maintaining optimal blood glucose level is linked to promoting glycolysis, fostering the reduction of glucose production in the liver and slowing down the breakdown and absorption of carbohydrates in the intestines<sup>4,5</sup>. Those wishing to **maintain optimal blood cholesterol level** also take advantage of berberine's valuable properties<sup>6</sup>. It is believed that berberine fosters the increase in the number of LDL receptors in the liver, which may help in removing the "bad" LDL cholesterol from the body. Berberine can also impact signaling pathways engaged in the production of fats in the body. It has also been proven that berberine has an effect similar to that of phytosterols by helping block the absorption of lipids from the small intestine<sup>7,8</sup>. Some studies have shown that berberine may aid **the process of adipose tissue reduction**. It enhances the action of the AMPK enzyme responsible for storing adipose tissue for burning<sup>9</sup>. Chronic AMPK activation can have a similar effect on the body to intense physical exercise. Berberine may also enhance the expression of some genes, so-called lipogenic genes that contribute to the lowering of the lipid level, the reduction of fat mass and improve insulin sensitivity<sup>10</sup>. Berberine also fosters the activity of adiponectin, a hormone secreted by adipose tissue. This hormone makes tissues more sensitive to insulin and impacts the metabolism of glucose and fatty acids in muscles and the liver. As a result, the body's carbohydrate balance is restored and, in consequence, insuline spikes and urges to binge eat are reduced. Moreover, berberine helps inhibit the division of preadipocytes (cells that adipose tissue is made of), which is a consequence of the impact it has on PPARs (peroxisome

proliferator-activated receptor)<sup>11</sup>. As a consequence, **supplementing berberine may foster weight loss**. Another valuable effect of berberine that supports the body is **liver protection**<sup>12</sup>. This is due to the antioxidant properties of this alkaloid and its support for the activity of enzymes responsible for detoxification<sup>13</sup>. The above-mentioned **antioxidative properties** of barberry are yet another advantage that stems from supplementing this ingredient. It helps protect cells against the destructive impact of free radicals, thus helping slow down body ageing processes and maintaining the body's general good condition<sup>14</sup>. The antioxidative effect also helps fight inflammations in the body<sup>14,15</sup>. Berberine may **aid to reduce inflammation** by helping, among others, to lower the level of cytokines responsible for the emergence of inflammation. **Berberine also supports the immune system** by fostering the production of white cells that are necessary for normal functioning of human immunity<sup>16</sup>. Moreover, barberry may also help **support normal functioning of the digestive tract**. Antibacterial and above-mentioned anti-inflammatory properties of berberine may support intestinal microbiota of people suffering from various gastrointestinal issues (including diarrhoea or intestinal bacterial overgrowth)<sup>17</sup>.

## What makes the DUOLIFE Berberine food supplement stand out?

- ▶ **Simple, targeted composition** – based on the main active ingredient **with known properties and a concentrated dose**.
- ▶ **Product with comprehensible purpose** – featuring health statements on the label, which makes it easier to recommend the product.
- ▶ **Naturally sourced ingredients**.
- ▶ **No artificial fillers, preservatives or unnecessary additives**.
- ▶ **Convenient form of use – capsules made of organic cellulose derivative (HPMC; hypromellose; hydroxypropyl methylcellulose)** with delayed release time, supporting the protection of active ingredients against the acidic pH of the gastric juice.
- ▶ **Uniformity of the Pure Formula line – easy recommendation** – 1 packaging contains 60 capsules for 1 month of use (2 capsules a day).
- ▶ **The supplement can be easily adjusted to the individual needs of the body**.
- ▶ The product is **LACTOSE-FREE** and **GMO free**.
- ▶ The product is **GLUTEN-FREE** – suitable for people with gluten intolerance.
- ▶ The product is **suitable for vegans and vegetarians**.
- ▶ Multilingual label.

**i** Reference list for DUOLIFE Berberine formulation can be found in the separate sheet of the binder.

## References

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1. Srivastava, S., Srivastava, M., Misra, A., Pandey, G., & Rawat, A. (2015). A review on biological and chemical diversity in Berberis (Berberidaceae). *EXCLI journal*, 14, 247.
2. Zhang, Y., Li, X., Zou, D., Liu, W., Yang, J., Zhu, N., ... & Ning, G. (2008). Treatment of type 2 diabetes and dyslipidemia with the natural plant alkaloid berberine. *The Journal of Clinical Endocrinology & Metabolism*, 93(7), 2559-2565.
3. Lan, J., Zhao, Y., Dong, F., Yan, Z., Zheng, W., Fan, J., & Sun, G. (2015). Meta-analysis of the effect and safety of berberine in the treatment of type 2 diabetes mellitus, hyperlipemia and hypertension. *Journal of ethnopharmacology*, 161, 69-81.
4. Yin, J., Ye, J., & Jia, W. (2012). Effects and mechanisms of berberine in diabetes treatment. *Acta Pharmaceutica Sinica B*, 2(4), 327-334.
5. Pang, B., Zhao, L. H., Zhou, Q., Zhao, T. Y., Wang, H., Gu, C. J., & Tong, X. L. (2015). Application of berberine on treating type 2 diabetes mellitus. *International journal of endocrinology*, 2015.
6. Dong, H., Zhao, Y., Zhao, L., & Lu, F. (2013). The effects of berberine on blood lipids: a systemic review and meta-analysis of randomized controlled trials. *Planta medica*, 79(06), 437-446.
7. Doggrell, S. A. (2005). Berberine—a novel approach to cholesterol lowering: KONG W, WEI J, ABIDI P et al.: Berberine is a novel cholesterol-lowering drug working through a unique mechanism distinct from statins. *Nat. Med.* (2005) 12: 1344-1351. *Expert opinion on investigational drugs*, 14(5), 683-685.
8. Cao, C., & Su, M. (2019). Effects of berberine on glucose-lipid metabolism, inflammatory factors and insulin resistance in patients with metabolic syndrome. *Experimental and therapeutic medicine*, 17(4), 3009-3014.
9. Och, A., Och, M., Nowak, R., Podgórska, D., & Podgórski, R. (2022). Berberine, a herbal metabolite in the metabolic syndrome: The risk factors, course, and consequences of the disease. *Molecules*, 27(4), 1351.
10. Lee, Y. S., Kim, W. S., Kim, K. H., Yoon, M. J., Cho, H. J., Shen, Y., ... & Kim, J. B. (2006). Berberine, a natural plant product, activates AMP-activated protein kinase with beneficial metabolic effects in diabetic and insulin-resistant states. *Diabetes*, 55(8), 2256-2264.
11. Wang, H., Zhu, C., Ying, Y., Luo, L., Huang, D., & Luo, Z. (2018). Metformin and berberine, two versatile drugs in treatment of common metabolic diseases. *Oncotarget*, 9(11), 10135.
12. Zhu, X., Guo, X., Mao, G., Gao, Z., Wang, H., He, Q., & Li, D. (2013). Hepatoprotection of Berberine Against Hydrogen Peroxide induced Apoptosis by Upregulation of Sirtuin 1. *Phytotherapy Research*, 27(3), 417-421.
13. Zhou, M., Deng, Y., Liu, M., Liao, L., Dai, X., Guo, C., ... & Li, Y. (2021). The pharmacological activity of berberine, a review for liver protection. *European Journal of Pharmacology*, 890, 173655.
14. Li, Z., Geng, Y. N., Jiang, J. D., & Kong, W. J. (2014). Antioxidant and anti-inflammatory activities of berberine in the treatment of diabetes mellitus. *Evidence-based complementary and alternative medicine*, 2014.
15. Li W., Yin N., Tao W., Wang Q., Fan H., Wang Z.: Berberine suppresses IL-33-induced inflammatory responses in mast cells by inactivating NF- $\kappa$ B and p38 signaling. *Int Immunopharmacol.* 2018 Nov 13;66:82-90.
16. Ehteshamfar, S. M., Akhbari, M., Afshari, J. T., Seyedi, M., Nikfar, B., Shapouri Moghaddam, A., ... & Momtazi Borojeni, A. A. (2020). Anti inflammatory and immune modulatory impacts of berberine on activation of autoreactive T cells in autoimmune inflammation. *Journal of cellular and molecular medicine*, 24(23), 13573-13588.
17. Chen, C., Tao, C., Liu, Z., Lu, M., Pan, Q., Zheng, L., ... & Fichna, J. (2015). A randomized clinical trial of berberine hydrochloride in patients with diarrhea predominant irritable bowel syndrome. *Phytotherapy research*, 29(11), 1822-1827.