

# Berberine HCl – Maintains Healthy Glucose Metabolism and Cardiovascular Health

## About Berberine HCl

- Berberine is the naturally occurring alkaloid found in many medicinal plant species worldwide. These plants include: barberry (*Berberis vulgaris*), Chinese goldthread (*Coptis chinensis*), goldenseal (*Hydrastis canadensis*), Indian barberry (*Berberis aristata*), and Oregon grape (*Berberis aquifolium*).<sup>1</sup>
- It helps decrease blood cholesterol and blood sugar.<sup>2,3</sup>
- It helps reduce body weight on average of 5 lb, or 2.67 kg in overweight population.<sup>4</sup>
- With additional healthy lifestyle changes, berberine may help reduce blood pressure.<sup>5</sup>

## How to Use Berberine HCl

- 1 capsule 2 times per day with meals or as directed by a health care practitioner. Consult a health care practitioner for use beyond 3 months.

## Cautions and Contraindications

- Consult a health care practitioner if you have leucopenia, a kidney disorder, hypotension or blood pressure problems. Consult a health care practitioner prior to use if you have hypoglycemia or diabetes.<sup>6</sup> Do not use if you are pregnant or breastfeeding.<sup>7</sup> May cause gastrointestinal discomfort such as constipation, vomiting, abdominal pain, or diarrhea, in which case discontinue use and consult a health care practitioner.<sup>8</sup> Keep out of reach of children.

## Drug Interactions

- If you are taking prescription medications, consult a health care practitioner prior to use as berberine may alter their effectiveness.<sup>9</sup> Consult a health care practitioner prior to use if you have low blood sugar (hypoglycemia), low blood pressure (hypotension), or reduced heart rate (bradycardia).<sup>10,11</sup> As berberine increases the levels of the drug cyclosporin A, those who have had organ transplants should consult a health care practitioner before using this product.<sup>12,13</sup> Berberine may inhibit cytochrome enzymes CYP2D6, 3A4, and CYP2C9, and use of medications metabolized by these enzymes should be monitored.<sup>9</sup> If symptoms persist or worsen, consult a health care practitioner.

## Quick Tips for Optimal Health

- The DASH diet (i.e., potassium-rich fruits and vegetables, low-fat dairy products, and reduced salt intake) has been shown to be very helpful in lowering cholesterol and modifying other cardiovascular risk factors.<sup>14,15</sup>
- Just 250 mL (just over a cup) of beetroot juice helps support cardiovascular health.<sup>16</sup>
- Eating a handful of almonds (1.5 oz/42.52 g) daily not only helps reduce LDL cholesterol, but also reduces your waist size.<sup>17</sup>
- Learning various stress management techniques helps reduce blood pressure in the workplace by 10.6 mm Hg systolic (the top number) and 6.3 mm Hg in diastolic (the bottom number).<sup>18</sup>
- Stop smoking: Within one year of quitting, the risk of dying from smoking-related heart disease is cut by 50%.<sup>19</sup>
- Eating 10 g of ground flaxseed per day for just 30 days helps lower your fasting blood sugar by almost 20%.<sup>20</sup>
- Long-term endurance exercise and/or strength training not only helps reduce the risk of heart disease, but also lowers fasting blood sugar in certain conditions.<sup>21</sup>
- Soluble dietary fibre supplements (i.e., PGX or psyllium) not only help lower LDL cholesterol, but decrease blood sugar levels as well.<sup>22,23,24</sup>
- Adopting a low-glycemic index diet also helps lower fasting blood sugar levels in certain conditions.<sup>25</sup>
- Substituting dietary legumes (i.e., beans, nuts, peas, lentils) for red meat helps improve blood sugar control and lower LDL cholesterol in certain conditions.<sup>26</sup>

PATIENT NAME: \_\_\_\_\_

**PRACTITIONER NOTES:**

---



---



---



---



---



---



---

PRACTITIONER CONTACT INFORMATION:

## References

---

1. Berberine. (2000). *Altern Med Rev*, 5(2), 175-7.
2. Zhang, Y., Li, X., Zou, D., et al. (2008). Treatment of type 2 diabetes and dyslipidemia with the natural plant alkaloid berberine. *J Clin Endocrinol*, 93(7), 2559-65.
3. Chang, W., Chen, L., & Hatch, G. M. (2015). Berberine as a therapy for type 2 diabetes and its complications: From mechanism of action to clinical studies. *Biochem Cell Biol*, 93(5), 479-86.
4. Hu, Y., Ehi, E. A., Kittelsrud, J., et al. (2012). Lipid-lowering effect of berberine in human subjects and rats. *Phytomedicine*, 19(10), 861-7.
5. Lan, J., Zhao, Y., Dong, F., et al. (2015). Meta-analysis of the effect and safety of berberine in the treatment of type 2 diabetes mellitus, hyperlipemia and hypertension. *J Ethnopharmacol*, 161, 69-81.
6. Bhowmick, S. K., Hundley, O. T., & Rettig, K. R. (2007). Severe hypernatremia and hyperosmolality exacerbated by an herbal preparation in a patient with diabetic ketoacidosis. *Clin Pediatr*, 46(9), 831-4.
7. Gardner, Z., & McGuffin, M. (2013). *American Herbal Products Association Botanical Safety Handbook* (2nd ed., p. 262). CRC Press.
8. Yin, J., Xing, H., & Ye, J. (2008). Efficacy of berberine in patients with type 2 diabetes mellitus. *Metabolism*, 57(5), 712-7.
9. Guo, Y., Chen, Y., Tan, Z. R., et al. (2012). Repeated administration of berberine inhibits cytochromes P450 in humans. *Eur J Clin Pharmacol*, 68(2), 213-7.
10. Singh, A., Sanjiv, D., Kaur, N., et al. (2010). Berberine: Alkaloid with wide spectrum of pharmacological activities. *J Nat Prod*, 3, 64-75.
11. Cannillo, M., Frea, S., Fornengo, C., et al. (2013). Berberine behind the thriller of marked symptomatic bradycardia. *World J Cardiol*, 5(7), 261-4.
12. Xin, H. W., Wu, X. C., Li, Q., et al. (2006). The effects of berberine on the pharmacokinetics of cyclosporin A in healthy volunteers. *Methods Find Exp Clin Pharmacol*, 28(1), 25-9.
13. Wu, X., Li, Q., Xin, H., et al. (2005). Effects of berberine on the blood concentration of cyclosporin A in renal transplanted recipients: clinical and pharmacokinetic study. *Eur J Clin Pharmacol*, 61(8), 567-72.
14. Obarzanek, E., Sacks, F. M., Vollmer, W. M., et al. Effects on blood lipids of a blood pressure-lowering diet: the Dietary Approaches to Stop Hypertension (DASH) Trial. *The Am J Clin Nutr*, 74(1), 80-9.
15. Sacks, F. M., Svetkey, L. P., Vollmer, W. M., et al. Effects on blood pressure of reduced dietary sodium and the Dietary Approaches to Stop Hypertension (DASH) diet. DASH-Sodium Collaborative Research Group. *N Engl J Med*, 344(1), 3-10.
16. Kapil, V., Khambata, R. S., Robertson, A., et al. (2015). Dietary nitrate provides sustained blood pressure lowering in hypertensive patients: a randomized, phase 2, double-blind, placebo-controlled study. *Hypertension*, 65(2), 320-7.
17. Berryman, C. E., West, S. G., Fleming, J. A., et al. (2015). Effects of daily almond consumption on cardiometabolic risk and abdominal adiposity in healthy adults with elevated LDL-cholesterol: a randomized controlled trial. *J Am Heart Assoc*, 4(1), e000993.
18. McCraty, R., Atkinson, M., & Tomasino, D. (2003). Impact of a workplace stress reduction program on blood pressure and emotional health in hypertensive employees. *J Altern Complement Med*, 9(3), 355-69.
19. Lightwood, J. M., & Glantz, S. A. (1997). Short-term economic and health benefits of smoking cessation: myocardial infarction and stroke. *Circulation*, 96(4), 1089-96.
20. Mani, U. V., Mani, I., Biswas, M., et al. (2011). An open-label study on the effect of flax seed powder (*Linum usitatissimum*) supplementation in the management of diabetes mellitus. *J Diet Suppl*, 8(3), 257-65.
21. Cauza, E., Hanusch-Enserer, U., Strasser, B., et al. (2006). The metabolic effects of long term exercise in Type 2 Diabetes patients. *Wiener medizinische Wochenschrift (1946)*, 156(17-18), 515-9.
22. Ziai, S. A., Larijani, B., Akhondzadeh, S., et al. (2005). Psyllium decreased serum glucose and glycosylated hemoglobin significantly in diabetic outpatients. *J Ethnopharmacol*, 102(2), 202-7.
23. Rodríguez-Morán, M., Guerrero-Romero, F., & Lazcano-Burciaga, G. (1998). Lipid- and glucose-lowering efficacy of Plantago Psyllium in type II diabetes. *JDC*, 12(5), 273-8.
24. Lyon, M. R., & Reichert, R. G. (2010). The effect of a novel viscous polysaccharide along with lifestyle changes on short-term weight loss and associated risk factors in overweight and obese adults: an observational retrospective clinical program analysis. *Altern Med Rev*, 15(1), 68-75.
25. Rizkalla, S. W., Taghrid, L., Laromiguiere, M., et al. (2004). Improved plasma glucose control, whole-body glucose utilization, and lipid profile on a low-glycemic index diet in type 2 diabetic men: a randomized controlled trial. *Diabetes Care*, 27(8), 1866-72.
26. Hosseinpour-Niazi, S., Mirmiran, P., Hedayati, M., et al. (2015). Substitution of red meat with legumes in the therapeutic lifestyle change diet based on dietary advice improves cardiometabolic risk factors in overweight type 2 diabetes patients: a cross-over randomized clinical trial. *Eur J Clin Nutr*, 69(5), 592-7.