



Bioperine® is a standardized extract from black pepper or *Piper longum* L. The active component, piperine, is recognized most for its enhancement of the bioavailability of many nutrients,¹ including curcumin.² Piperine is rapidly absorbed by the gastrointestinal tract³ and enhances gastrointestinal absorption of other nutrients through a combination of processes.⁴ Other recognized benefits of piperine include: 1) immune support;^{5,6} 2) improved joint health,⁷ and 3) support of mood state and cognitive function.⁸

¹ **Black pepper and its pungent principle-piperine: a review of diverse physiological effects.** Srinivasan K. Crit Rev Food Sci Nutr. 2007;47(8):735-48. <http://www.ncbi.nlm.nih.gov/pubmed/17987447>

² **Influence of piperine on the pharmacokinetics of curcumin in animals and human volunteers.** Shoba G, Joy D, Joseph T, et al. Planta Med. 1998 May;64(4):353-6. <http://www.ncbi.nlm.nih.gov/pubmed/9619120>

³ **Permeability characteristics of piperine on oral absorption--an active alkaloid from peppers and a bioavailability enhancer.** Khajuria A, Zutshi U, Bedi KL. Nutr. Biochem. (2000) 11: 109-113. <http://www.ncbi.nlm.nih.gov/pubmed/9536651>

⁴ **Piperine modulates permeability characteristics of intestine by inducing alterations in membrane dynamics: influence on brush border membrane fluidity, ultrastructure and enzyme kinetics.** Khajuria A, Thusu N, Zutshi U. Phytomedicine. 2002 Apr;9(3):224-31. <http://www.ncbi.nlm.nih.gov/pubmed/12046863>

⁵ **Chemopreventive efficacy of curcumin and piperine during 7,12-dimethylbenz[a]anthracene-induced hamster buccal pouch carcinogenesis.** Manoharan S, Balakrishnan S, Menon V, et al. Singapore Med J. 2009 Feb;50(2):139-46. Abstract and free full text access: <http://www.ncbi.nlm.nih.gov/pubmed/19296028>

⁶ **Piperine inhibits eosinophil infiltration and airway hyperresponsiveness by suppressing T cell activity and Th2 cytokine production in the ovalbumin-induced asthma model.** Kim SH, Lee YC. J Pharm Pharmacol. 2009 Mar;61(3):353. <http://www.ncbi.nlm.nih.gov/pubmed/19222908>

⁷ **Anti-inflammatory and anti-arthritic effects of piperine in human interleukin-1beta-stimulated fibroblast-like synoviocytes and in rat arthritis models.** Bang JS, Oh DH, Choi HM, et al. Arthritis Res Ther. 2009 Mar 30;11(2):R49. <http://www.ncbi.nlm.nih.gov/pubmed/19327174>; Free full text: <http://arthritis-research.com/content/11/2/R49>.

⁸ **Piperine, the potential functional food for mood and cognitive disorders.** Wattanathorn J, Chonpathompikunlert P, Muchimapura S, et al. Food Chem Toxicol. 2008 Sep;46(9):3106-10. <http://www.ncbi.nlm.nih.gov/pubmed/18639606>.