



Blood Viscosity Interpretation Guide - References

1. Lowe GDO, Lee a. J, Rumley a., Price JF, Fowkes FGR. Blood viscosity and risk of cardiovascular events: The Edinburgh Artery Study. *Br J Haematol.* 1997;96:168–73.
2. Coull BM, Beamer N, de Garmo P, Sexton G, Nordt F, Knox R, et al. Chronic blood hyperviscosity in subjects with acute stroke, transient ischemic attack, and risk factors for stroke. *Stroke [Internet].* 1991 Feb 1 [cited 2014 Aug 7];22(2):162–8. Available from: <http://stroke.ahajournals.org/cgi/doi/10.1161/01.STR.22.2.162>
3. Rafnsson S, Deary I, Whiteman M. Haemorheological predictors of cognitive decline: the Edinburgh Artery Study. *Age ... [Internet].* 2010 [cited 2013 Mar 7]; Available from: <http://ageing.oxfordjournals.org/content/39/2/217.short>
4. Cho Y-I, Cho DJ. Hemorheology and microvascular disorders. *Korean Circ J [Internet].* 2011 Jun [cited 2012 Jul 9];41(6):287–95. Available from: <http://www.ncbi.nlm.nih.gov/pmc/articles/PMC3132688/>&tool=pmcentrez&rendertype=abstract
5. Turczynski B, et al. Correlations between the severity of retinopathy in diabetic patients and whole blood and plasma viscosity. *Clin Hemorheol Microcirc.* 2003; 29(2): 129-37.
6. Richards RS, Nwose EU. Blood viscosity at different stages of diabetes pathogenesis. *Br J Biomed Sci [Internet].* 2010 Jan;67(2):67–70. Available from: <http://www.ncbi.nlm.nih.gov/pubmed/20669761>
7. Sloop G, Holsworth RE, Weidman JJ, St Cyr J a. The role of chronic hyperviscosity in vascular disease. *Ther Adv Cardiovasc Dis [Internet].* 2014 Sep 26 [cited 2014 Oct 29]; Available from: <http://www.ncbi.nlm.nih.gov/pmc/articles/PMC4252608/>
8. Kensey KR, Cho YI. The origin of atherosclerosis: What really initiates the inflammatory process. 2nd editio. Summersville, WV: Segmedica; 2007. 200 p.
9. Caro CG. Discovery of the role of wall shear in atherosclerosis. *Arterioscler Thromb Vasc Biol [Internet].* 2009 Feb [cited 2012 Mar 20];29(2):158–61. Available from: <http://www.ncbi.nlm.nih.gov/pmc/articles/PMC2649849/>
10. Rillaerts E, van Gaal L, et al. Blood Viscosity in Human Obesity: Relation to Glucose Tolerance and Insulin Status. *Int J Obes.* 1989; 13:739-45.



11. Scovborg F, et al. Blood-viscosity in diabetic patients. *Lancet*. 1966 Jan 15; 1(7429): 129-31.
12. Kameneva MV, et al. Gender difference in rheologic properties of blood and risk of cardiovascular diseases. *Clin Hemorheol Microcirc*. 1999; 21(3-4):357-63.
13. Kameneva MV, et al. Red blood cell aging and risk of cardiovascular disease. *Clin Hemorheol Microcirc*. 1998; 18:67-74.
14. Barnes AJ, et al. Is hyperviscosity a treatable component of diabetic microcirculatory disease? *Lancet*. 1977 Oct 15; 2(8042): 789-91.
15. Chung TW, et al. Increased red cell rigidity might affect retinal capillary blood flow velocity and oxygen transport efficiency in type II diabetes. *Diabetes Res*. 1993; 23(2): 75-82. PMID 7712862.
16. Doi T, Sakurai M, Hamada K, et al. Plasma volume and blood viscosity during 4 h sitting in a dry environment. *Aviat Space Environ Med*. 2004;75(6):500-504.
17. Holsworth RE, Cho YI, Weidman J. Effect of hydration on whole blood viscosity in firefighters. *Altern Ther Health Med* [Internet]. 2013;19(4):44–9. Available from: <http://www.ncbi.nlm.nih.gov/pubmed/23981371>
18. Salonen JT, Tuomainen TP, Salonen R, Lakka TA, Nyssönen K. Donation of blood is associated with reduced risk of myocardial infarction. The Kuopio Ischaemic Heart Disease Risk Factor Study. *Am J Epidemiol*. 1998;148(5):445–51.
19. Houshyar KS, et al. Effects of phlebotomy-induced reduction of body iron stores on metabolic syndrome: results from a randomized clinical trial. *BMC Med* 2012; 10:54.
20. Holsworth R, Cho Y, Weidman JJ, Sloop G, St Cyr J. Cardiovascular benefits of phlebotomy: relationship to changes in hemorheological variables. *Perfusion* [Internet]. 2013 Sep 25 [cited 2013 Oct 3];(September). Available from: <http://www.ncbi.nlm.nih.gov/pubmed/24045034>
21. Woodcock, B., et al., Beneficial effect of fish oil on blood viscosity in peripheral vascular disease. *British Medical Journal (Clinical research ed.)*, 1984. 288(6417): p. 592–594.
22. Mueller BA, et al., Biological mechanisms and cardiovascular effects of omega-3 fatty acids. *Clin Pharm*, 1988. Nov;7(11):705-807.

23. Dou M, et al. Supplementation with magnesium and vitamin E were more effective than magnesium alone to decrease plasma lipids and blood viscosity in diabetic rats. *Nutr Res*, 2009 Jul;29(7):519-24.
24. Holsworth RH and Cho YI. Hyperviscosity Syndrome: A Nutritionally Modifiable Cardiovascular Risk Factor. (book chapter) *Advancing Medicine with Food and Nutrients*, 2nd ed.
25. Arduini A, et al. Effect of L-carnitine and acetyl-L-carnitine of the human erythrocyte membrane stability and deformability. *Life Sci*, 1990. 47(26):2395-400.
26. Arduini A, et al. Effect of propionyl-L-carnitine treatment on membrane phospholipid fatty acid turnover in diabetic rat erythrocytes. *Mol Cell Biochem*, 1995 Nov 8;152(1):31-7.
27. Turchetti V, et al. Blood viscosity and red cell morphology in subjects suffering from cirrhosis before and after treatment with S-adenosyl-L-methionine (SAM). *Clin Hemorheol Microcirc*, 2000;22(3):215-21.
28. Ginkgo biloba. *Altern Med Rev*. 1998 Feb;3(1):54-57.
29. Santos RF, et al. Cognitive performance, SPECT, and blood viscosity in elderly non-demented people using Ginkgo biloba. *Pharmacopsychiatry*, 2003 Jul;36(4):127-33.
30. Erdinyer DS, et al., The effect of Ginkgo Biloba glycoside on the blood viscosity and erythrocyte deformability. *J Clin Hemorrheol Microcirc*, 1996;16(3):271-6.
31. Galduro za JCF, et al. Gender- and age-related variations in blood viscosity in normal volunteers: A study of the effects of Allium sativum and Ginkgo biloba. *Phytomedicine*, 2007. 14:447-451.
32. Kidd P. Astaxanthin, cell membrane nutrient with diverse clinical benefits and anti-aging potential. *Altern Med Rev*. 2011 Dec;16(4):355-64.
33. Brandão MM, et al. Impaired red cell deformability in iron deficient subjects. *Clin Hemorheol Microcirc*. 2009;43(3):217-21.
34. Hsia CH, Shen MC, Lin JS, Wen YK, Hwang KL, Cham TM, et al. Nattokinase decreases plasma levels of fibrinogen, factor VII, and factor VIII in human subjects. *Nutr Res* [Internet]. Elsevier Inc.; 2009;29(3):190–6. Available from: <http://dx.doi.org/10.1016/j.nutres.2009.01.009>



35. Jang J-Y, Kim T-S, Cai J, Kim J, Kim Y, Shin K, et al. Nattokinase improves blood flow by inhibiting platelet aggregation and thrombus formation. *Lab Anim Res* [Internet]. 2013;29(4):221–5. Available from: <http://www.ncbi.nlm.nih.gov/pmc/articles/PMC3879341/>&tool=pmcentrez&rendertype=abstract
36. Pais E, Alexy T, Holsworth R. Effects of nattokinase, a pro-fibrinolytic enzyme, on red blood cell aggregation and whole blood viscosity. *Clin Hemorheol ...* [Internet]. 2006 [cited 2014 Oct 29];35:139–42. Available from: <http://iospress.metapress.com/index/2HCYU2Q9KVGL8M3K.pdf>
37. Sumi H, et al. Enhancement of the fibrinolytic activity in plasma by oral administration of nattokinase. *Acta Haematol* 1990;84(3):139-43.
38. Calvino, N. Nattokinase, A Potent Fibrinolytic Enzyme Extract of Traditional Japanese Food: Landmark Development for Cardiovascular Health
39. Yatagai, C., M. Maruyama, and H. Sumi. *Nattokinase-promoted tissue plasminogen activator release from human cells*. Pathophysiology of Haemostasis and Thrombosis. 2008. 36(5): p. 227–232
40. Verma MK, et al. Lumbrokinase – a potent and stable fibrin-specific plasminogen activator. *Int J Bio-Sci and Bio-Tech*. June, 2011; 3(2):57-70.