

## References

1. Voytovich AN, Bogdanova MA, Smirnov BI, Badmaeva MI, Pardo-Rerales GD, Boytsov SA, Kirillova NV, Berkovich OA, Shlyachto EV, Larionova VI. *Arterial'naya Hypertensiya – Arterial hypertension*. 2010;6:34–41. (in Russ)
2. Efimtseva EA, Chelpanova TI. *Uspekhi Sovremennoi Biologii – The Successes of Modern Biology* 2009;129(5):440–53. (in Russ)
3. Efimtseva EA, Chelpanova TI. *Uspekhi Sovremennoi Biologii – The Successes of Modern Biology* 2012;132(3):282–96. (in Russ)
4. Korobov GA, Sazonova MA, Sobenin IA, Postnov AU. *Cardiology Vestnik – Bull Cardiol* 2011;VI(2):5–9. (in Russ)
5. Lankin VZ, Tikhaze AK, Belenkov YuN. *Kardiologiya – Cardiology* 2000;40(7):48–61. (in Russ)
6. Oktyabr'skiy ON, Smirnova GV. *Biochemistry* 2007;72(2):158–174. (in Russ)
7. Huang Y, Zhang JL, Yu XLY, Xu TS, Wang ZB, Cheng XC. *Biochemistry* 2013;78(3):303–13. (in Russ)
8. Shevelev AY, Kashirina NM, Rutkevich PN, Re klo MM, Rybalkin IW, Gurskaya TCh, Yanushevskaya EV, Slinkin MA, Lipatova LN, Aref'eva TI, Kudriashova IV, Radyukhina NV, Vlasik TN. *Cardiology Vestnik – Bulletin of cardiology* 2010;V(2):22–30. (in Russ)
9. Altenhofer S, Witte I, Teiber JF, Wilgenbus P, Pautz A, Li H, Daiber A, Witan H, Clement AM, Forstermann U, Horke S. One Enzyme, Two Functions PON2 Prevents Mitochondrial Superoxide Formation and Apoptosis Independent from its Lactonase Activity. *J Biol Chem* 2013;285(32):24398–403.
10. Andersen HR, Wohlfahrt-Veje C, Dalgard C, Christiansen L, Main KM, Nellemann C, Murata K, Jensen TK, Skakkebaek NE, Grandjean P. Paraoxonase 1 polymorphism and prenatal pesticide exposure associated with adverse cardiovascular risk profiles at school age. *PLoS ONE* 2012;7(5):e36830.
11. Bahrehmand F, Vaisi-Raygani A, Ahmadi R. Paraoxonase (PON1) 55 polymorphism and association with systemic lupus erythematosus. *Iran J Allergy Asthma Immunol* 2013;12(3):211–9.
12. Bourquard N, Carey JNg., Reddy ST. Impaired hepatic insulin signalling in PON2-deficient mice: a novel role for the PON2/apoE axis on the macrophage inflammatory response. *Biochem J* 2011;436(1):91–100.
13. Brugè F, Bacchetti T, Principi F, Scarpa ES, Littarru GP, Tiano L. Olive oil supplemented with Coenzyme Q(10): effect on plasma and lipoprotein oxidative status. *Biofactors* 2012;38(3):249–56.
14. Camps J, Carcia-Heredia A, Rull A, Alonso-Villaverde C, Aragonés G, Beltran-Debon R, Rodríguez-Gallego E, Joven J. PPARs in regulation of paraoxonases: control of oxidative stress and inflammation pathways. *PPAR Research* 2012;article ID 6163371:10.

15. Camps J, Marsillach J, Joven J. The paraoxonases: role in human diseases and methodological difficulties in measurement. *Crit Rev Clin Lab Sci* 2009;46(2):83–106.
16. Charles-Schoeman Ch, Lee Yuen Yin, Grijalva V, Amjadi S, FitzGerald J, Ranganath VK, Taylor M, McMahon M, Paulus HE, Reddy ST. Cholesterol efflux by high density lipoproteins is impaired in patients with active rheumatoid arthritis. *Ann Rheum Dis* 2012;71(7):1157–62.
17. Charles-Schoeman C, Lee YY, Shahbazian A, Gorn AH, Fitzgerald J, Ranganath VK, Taylor M, Ragavendra N, McMahon M, Elashoff D, Reddy ST. Association of Paraoxonase 1 gene polymorphisms and enzyme activity with carotid plaque in rheumatoid arthritis. *Arthritis Rheum* 2013;65(11):2765–72.
18. Cozzi L, Campolo J, Parolini M, De Maria R, Patrosso MC, Marocchi A, Parodi O, Penco S. Paraoxonase 1 L55M, Q192R and paraoxonase 2 S311C alleles in atherothrombosis. *Mol Cell Biochem* 2013;374(1-2):233–8.
19. Dasgupta S, Demirci FY, Dressen AS, Kao AH, Rhew EY, Ramsey-Goldman R, Manzi S, Kammerer CM, Kamboh MI. Association analysis of PON2 genetic variants with serum paraoxonase activity and systemic lupus erythematosus. *BMC Med Genetics* 2011;12:7.
20. Deakin SP, James RW. Genetic and environmental factors modulating serum concentrations and activities of the antioxidant enzyme paraoxonase-I. *Clin Sci* 2004;107:435–47.
21. Debord J, Bollinger JC, Harel M, Dantoine T. Temperature dependence of binding and catalysis for human serum arylesterase/paraoxonase. *Biochimie* 2013;97:72–7.
22. Devarajan A, Bourquard N, Hama S, Navab M, Grijalva VR, Morvardi S, Clarke CF, Vergnes L, Reue K, Tieber JT, Reddy ST. Paraoxonase 2 deficiency alters mitochondrial function and exacerbates the development of atherosclerosis. *Antioxidant and Redox Signaling* 2011;14(3):341–51.
23. Devarajana A, Grijalvaa VR, Bourquarda N, Meriwether D, Imaizumia S, Shind Bo-Chul, Devaskard ShU, Reddy ST. Macrophage Paraoxonase 2 regulates calcium homeostasis and cell survival under Endoplasmic Reticulum stress conditions and is sufficient to prevent the development of aggravated atherosclerosis in Paraoxonase 2 deficiency/apoE<sup>-/-</sup> mice on a Western diet. *Mol Genet Metab* 2012;107(3):416–27.
24. Durrington PN, Mackness B, Mackness MI. Paraoxonase and Atherosclerosis. *Artheroscler Thromb Vasc Biol* 2001;21:473–80.
25. Eren E, Yilmaz N, Aydin O. Functionally defective high-density lipoprotein and paraoxonase: a couple for endothelial dysfunction in atherosclerosis. *Cholesterol* 2013;Article ID 792090:10.
26. Farid AS, Horii Y. Modulation of paraoxonases during infectious diseases and its potential impact on atherosclerosis. *Lipids in Health and Dis* 2012;11:92–8.
27. Flekac M, Škrha J, Zidkova K, Lacinova Z, Hilgertova J. Paraoxonase 1 Gene Polymorphisms and Enzyme Activities in Diabetes Mellitus. *Physiol Res* 2008;57:717–26.
28. Furlong CE, Cole TB, Jarvik GP, Costa LG. Pharmacogenomic considerations of the paraoxonase polymorphisms. *Pharmacogenomics* 2002;3(3):341–8.

29. Gaidukov L, Rosenblat M, Aviram M, Tawfik DS. The 192R/Q polymorphs of serum paraoxonase PON1 differ in HDL binding, lipolactonase stimulation, and cholesterol efflux. *J Lipid Res* 2006;47:2492–502.
30. García-Heredia A, Marsillach J, Rull A, Triguero I, Fort I, Mackness B, Mackness M, Shih DM, Joven J, Camps J. Paraoxonase-1 Inhibits Oxidized Low-Density Lipoprotein-Induced Metabolic Alterations and Apoptosis in Endothelial Cells: A Nondirected Metabolomic Study. *Mediators of Inflammation* 2013;Article ID 156053:9.
31. Ginsberg G, Neafsey P, Hattis D, Guyton KZ, Johns DO, Sonawane B. Genetic polymorphism in paraoxonase 1 (PON1): Population distribution of PON1 activity. *J Toxicol Environ Health B Crit Rev* 2009;12(5-6):473–507.
32. Hashemi M, Moazeni-Roodi AK, Fazaeli A, Sandoughi M, Taheri M, Bardestani GR, Zakeri Z, Kordi-Tamandani DM, Ghavami S. The L55M polymorphism of paraoxonase-1 is a risk factor for rheumatoid arthritis. *Genet Mol Res* 2010;9(3):1735–41.
33. Huang Y, Wu Zh, Riwanto M, Gao S, Levison BS, Gu X, Fu X, Wagner MA, Besler Ch, Gerstenecker G, Zhang R, Li X-M, DiDonato AJ, Gogonea V, Tang WHW, Smith JD, Plow EF, Fox PL, Shih DM, Lusic AJ, Fisher EA, DiDonato JA, Landmesser U, Hazen SL. Myeloperoxidase, paraoxonase-1, and HDL form a functional ternary complex. *J Clin Investig* 2013;123(9):3815–28.
34. Ichikawa K, Konta T, Emi M, Toriyama S, Takasaki S, Ikeda A, Shibata Y, Takabatake N, Takeishi Y, Kato T, Kawata S, Kubota I. Genetic polymorphisms of paraoxonase-1 are associated with chronic kidney disease in Japanese women. *Kidney Int* 2009;76(2):183–9.
35. Irace C, Cortese C, Fiaschi E, Scavelli F, Liberatoscioli L, Federici G, Gnasso A. The influence of PON1 192 polymorphism on endothelial function in diabetic subjects with or without hypertension. *Hypertens Res* 2008;31(3):507–13.
36. Isik A, Koca SS, Ustundag B, Celik H, Yildirim A. Paraoxonase and arylesterase levels in rheumatoid arthritis. *Clin Rheumatol* 2007;26(3):342–8.
37. Ito T, Yasue H, Yoshimura M, Nakamura S, Nakayama M, Shimasaki Y, Harada E, Mizuno Y, Kawano H, Ogawa H. Paraoxonase gene Gln192Arg (Q192R) polymorphism is associated with coronary artery spasm. *Hum Genet* 2002;110(1):89–94.
38. James RW, Deakin SP. The contribution of high density lipoprotein apolipoproteins and derivatives to serum paraoxonase-1 activity and function. *Adv Exp Med Biol* 2010;660:173–81.
39. Kenneth E, Archer SL. The role of redox changes in oxygen sensing. *Respir Physiol Neurobiol* 2010;174(3):182–91.
40. Kerekes G, Szekanecz Z, Dér H, Sándor Z, Lakos G, Muszbek L, Csipö I, Sipka S, Seres I, Paragh G, Kappelmayer J, Szomják E, Veres K, Szegedi G, Shoenfeld Y, Soltész P. Endothelial dysfunction and atherosclerosis in rheumatoid arthritis: a multiparametric analysis using imaging techniques and laboratory markers of inflammation and autoimmunity. *J Rheumatol* 2008;35(3):398–406.
41. Kerkeni M, Addad F, Chauffert M, Chuniaud L, Miled A, Trivin F, Maaroufi K. Hyperhomocysteinemia, paraoxonase activity and risk of coronary artery disease. *Clin Biochem* 2006;39(8):821–5.

42. Kim DS, Marsillach J, Furlong CE, Jarvik GP. Pharmacogenetics of paraoxonase activity: elucidating the role of high-density lipoprotein in disease. *Pharmacogenomics* 2013;14(12):1495–515.
43. Kontush A, Hübner C, Finckh B, Kohlschütter A, Beisiegel U. Antioxidative activity of ubiquinol-10 at physiologic concentrations in human low density lipoprotein. *Biochimica et Biophysica Acta* 1995;1258(2):177–87.
44. Kovács TJ, Harris S, Vas TK, Seres I, Short CD, Wittmann IK, Paragh G, Mackness MI, Mackness B, Durrington PN, Nagy JM, Brenchley PE. Paraoxonase gene polymorphism and serum activity in progressive IgA nephropathy. *J Nephrol* 2006;19(6):732–8.
45. Lawlor DA, Day INM, Gaunt TR, Hinks LJ, Briggs PJ, Kiessling M, Timpson N, Smith GD, Ebrahim S. The association of the PON1 Q192R polymorphism with coronary heart disease: findings from the British Women’s Heart and Health cohort study and a meta-analysis. *BMC Genetics* 2004;5:17.
46. Li X, Zhang L, Chen X, Qu F, Li J, Ma C, Yang J, Xu B, Wang H, Xu Q, Zhang Y, Li Y, Lu C, Yin T. PON1 Q192R genotype influences clopidogrel responsiveness by relative platelet inhibition instead of on-treatment platelet reactivity. *Thromb Res* 2013;132(4):444–9.
47. Liu Mu-En, Liao Yi-Chu, Lin Ruey-Tay, Wang Yung-Song, Hsi Edward, Lin Hsiu-Fen, Chen Ku-Chung, Juo Suh-Hang H. A functional polymorphism of PON1 interferes with microRNA binding to increase the risk of ischemic stroke and carotid atherosclerosis. *Atherosclerosis* 2013;228:161–7.
48. Mackness B, Davies GK, Turkie W, Lee E, Roberts DH, Hill E, Roberts C, Durrington PN, Mackness MI. Paraoxonase status in coronary heart disease. Are activity and concentration more important than genotype? *Arterioscler Thromb Vasc Biol* 2001;21:1451–7.
49. Manolescu BN, Berteanu M, Cintează D. Effect of the nutritional supplement ALAnerv on the serum PON1 activity in post-acute stroke patients. *Pharmacol Rep* 2013;65:743–50.
50. Marra M, Marchegiani F, Antonicelli R, Sirolla C, Spazzafumo L, Olivieri F, Franceschi C, Testa R, Paolisso G, James RW, Boemi M, Parati G. The PON1192RR genotype is associated with a higher prevalence of arterial hypertension. *J Hypertens* 2006;24(7):1293–8.
51. Martinelli N, Consoli L, Girelli D, Grison E, Corrocher R, Olivieri O. Paraoxonases: ancient substrate hunters and their evolving role in ischemic heart disease. *Adv Clin Chem* 2013;59:65–100.
52. Mastorikou M, Mackness M, Mackness B. Defective metabolism of oxidized phospholipids by HDL from people with type 2 diabetes. *Diabetes* 2006p;55: 3099–103.
53. Mendonça MI, Dos Reis RP, Freitas AI, Sousa AC, Pereira A, Faria P, Gomes S, Silva B, Santos N, Serrão M, Ornelas I, Freitas S, Araújo JJ, Brehm A, Cardoso AA. Human paraoxonase gene polymorphisms and coronary artery disease risk. *Rev Port Cardiol* 2008;27(12):1539–55.
54. Mohammadshahi M, Haidari F, Saei AA, Rashidi B, Mahboob S, Rashidi MR. Soy protein, genistein, and daidzein improve serum paraoxonase activity and lipid profiles in rheumatoid arthritis in rats. *J Med Food* 2013;16(2):147–54.

55. Murakami H, Tanabe J, Tamasawa N, Matsumura K, Yamashita M, Matsuki K, Murakami H, Matsui J, Suda T. Reduction of paraoxonase-1 activity may contribute the qualitative impairment of HDL particles in patients with type 2 diabetes. *Diab Res Clin Pract* 2013;99(1):30–8.
56. Perla-Kajan J, Jakubowski H. Paraoxonase 1 protects against protein N-homocysteinylolation in humans. *FASEB J* 2010;24:931–6.
57. Perla-Kaján J, Jakubowski H. Paraoxonase 1 and homocysteine metabolism. *Amino Acids* 2012;43(4):1405–17.
58. Phuntuwate W, Suthisisang C, Koanantakul B, Chaloeiphap P, Mackness B, Mackness M. Effect of fenofibrate therapy on paraoxonase1 status in patients with low HDL-C levels. *Atherosclerosis* 2008;196(1):122–8.
59. Popa C, van Tits LJ, Barrera P, Lemmers HL, van den Hoogen FH, van Riel PL, Radstake TR, Netea MG, Roest M, Stalenhoef AF. Anti-inflammatory therapy with tumour necrosis factor alpha inhibitors improves high-density lipoprotein cholesterol antioxidative capacity in rheumatoid arthritis patients. *Ann Rheum Dis* 2009;68(6):868–72.
60. Razavi AE, Basati G, Varshosaz J, Abdi S. Association between HDL particles size and mieloperoxidase/paraoxonase-1 (MPO/PON1) ratio in patients with acute coronary syndrome. *Acta Medica Iranica* 2013;51(6):365–71.
61. Savu O, Serafinceanu C, Grajdeanu IV, Losif L, Gaman L, Stoian I. Paraoxonase lactonase activity, inflammation and antioxidant status in plasma of patients with type 1 diabetes mellitus. *J Int Med Res* 2014;Feb. 24.
62. Schafer FQ, Buettner GR. Redox environment of the cell as viewed through the redox state of the glutathione disulfide/glutathione couple. *Free Radical Biol and Med* 2001;30(11):1191–212.
63. Schweikert EM, Devarajan A, Witte I, Wilgenbus P, Amort J, Forstermann U, Shabazian A, Grijalva V, Shih DM, Farias-Eisner R, Teiber JF, Reddy ST, Horke S. PON3 is upregulated in cancer tissues and protects against mitochondrial superoxide-mediated cell death. *Cell Death Differentiation* 2012;19:1549–60.
64. Shao D, Oka Sh, Brady ChD, Haendeler J, Eaton P, Sadoshima J. Redox modification of cell signaling in the cardiovascular system. *J Mol Cell Cardiol* 2012;52(3):550–8.
65. Shenhar-Tsarfaty S, Waiskopf N, Ofek K, Shopin L, Usher S, Berliner S, Shapira I, Bornstein NM, Ritov Y, Soreq H, Ben Assayag E. Atherosclerosis and arteriosclerosis parameters in stroke patients associate with paraoxonase polymorphism and esterase activities. *Eur J Neurol* 2013;20(6):891–8.
66. Shih DM, Lusis AJ. The roles of PON1 and PON2 in cardiovascular disease and innate immunity. *Curr Opin Lipidol* 2009;20(4):288–92.
67. Simanski M, Babucke S, Eberl L, Harder J. Paraoxonase 2 Acts as a Quorum Sensing–Quenching Factor in Human Keratinocytes. *J Invest Dermatol* 2012;132:2296–9.
68. Tselepis AD, Tsoumani ME, Kalantzi KI, Dimitriou AA, Tellis CC, Goudevenos IA. Influence of high-density lipoprotein and paraoxonase-1 on platelet reactivity in patients with acute coronary syndromes receiving clopidogrel therapy. *J Thromb Haemost* 2011;9(12):2371–8.

69. Turunen M, Olsson J, Dallner G. Metabolism and function of coenzyme Q. *BBA* 2004;1660(1-2):177–99.
70. Ueno T, Shimazaki E, Matsumoto T, Watanabe H, Tsunemi A, Takahashi Y, Mori M, Hamano R, Fujioka T, Soma M, Matsumoto K, Kanmatsuse K. Paraoxonase1 polymorphism Leu-Met55 is associated with cerebral infarction in Japanese population. *Med Sci Monit* 2003;9(6):CR208–212.
71. Witte I, Altenhofer S, Wilgenbus P, Amort J, Clement AM, Pautz A, Li H, Forstermann U, Horke S. Beyond reduction of atherosclerosis: PON2 provides apoptosis resistance and stabilizes tumor cells. *Cell Death and Dis* 2011;2:e112.
72. Zagayko AL, Kravchenko GB, Krasilnikova OA, Ogai YO. Grape Polyphenols Increase the Activity of HDL Enzymes in Old and Obese Rats. *Oxidative Med and Cell Longevity* 2013;2013:593761.