

Table 1 Manipulating the Microbiome on CVD Risk

Species	Study Type	Subjects	Findings	Citation
Human	RCT	36	Supplementation with <i>Lactobacillus plantarum</i> produced a significant decrease in systolic BP, leptin, and fibrinogen in heavy smokers	Naruszewicz M, Johansson ML, Zapolska-Downar D, Bukowska H. Effect of <i>Lactobacillus plantarum</i> 299v on cardiovascular disease risk factors in smokers. <i>Am J Clin Nutr</i> . 2002 Dec;76(6):1249–55. doi: 10.1093/ajcn/76.6.1249. PMID: 12450890 ³¹
Human	Controlled clinical trial	24	Fermented milk with <i>L. plantarum</i> showed more favorable results in relation to cardiovascular risk factors such as glucose and homocysteine in postmenopausal women with MetS.	Barreto FM, Colado Simão AN, Morimoto HK, Batisti Lozovoy MA, Dichi I, Helena da Silva Miglioranza L. Beneficial effects of <i>Lactobacillus plantarum</i> on glycemia and homocysteine levels in postmenopausal women with metabolic syndrome. <i>Nutrition</i> . 2014 Jul-Aug;30(7–8):939–42. doi: 10.1016/j.nut.2013.12.004. Epub 2013 Dec 14. PMID: 24613434 ³²
Human	Meta analysis	641	Probiotic consumption significantly decreased systolic, diastolic BP, low density lipoprotein, total cholesterol and triglycerides, compared with placebo in T2DM	Hendijani F, Akbari V. Probiotic supplementation for management of cardiovascular risk factors in adults with type II diabetes: A systematic review and meta-analysis. <i>Clin Nutr</i> . 2018 Apr;37(2):532–541. doi: 10.1016/j.clnu.2017.02.015. Epub 2017 Feb 24. PMID: 28318686 ³³
Human	RCT	46	Fiber induced probiotics negative correlation with HgA1c	Zhao L, Zhang F, Ding X, Wu G, Lam YY, Wang X, Fu H, Xue X, Lu C, Ma J, Yu L, Xu C, Ren Z, Xu Y, Xu S, Shen H, Zhu X, Shi Y, Shen Q, Dong W, Liu R, Ling Y, Zeng Y, Wang X, Zhang Q, Wang J, Wang L, Wu Y, Zeng B, Wei H, Zhang M, Peng Y, Zhang C. Gut bacteria selectively promoted by dietary fibers alleviate type 2 diabetes. <i>Science</i> . 2018 Mar 9;359(6380):1151–1156. doi: 10.1126/science.aao5774. PMID: 29,590,046. ³⁴
Human	Observational study	21	Lp299v strain of probiotic improved vascular endothelial function and decreased systemic inflammation in men with CAD.	Malik M, Suboc TM, Tyagi S, Salzman N, Wang J, Ying R, Tanner MJ, Kakarla M, Baker JE, Widlansky ME. <i>Lactobacillus plantarum</i> 299v Supplementation Improves Vascular Endothelial Function and Reduces Inflammatory Biomarkers in Men With Stable Coronary Artery Disease. <i>Circ Res</i> . 2018 Oct 12;123(9):1091–1102. doi: 10.1161/CIRCRESAHA.118.313565. PMID: 30,355,158; PMCID: PMC6205737. ³⁵
Human	Systematic review	115	<i>Lactobacillus rhamnosus</i> GG most reduced plasma TMAO concentration	Cantero MA, Guedes MRA, Fernandes R, Lollo PCB. Trimethylamine N-oxide reduction is related to probiotic strain specificity: A systematic review. <i>Nutr Res</i> . 2022 Aug;104:29–35. doi: 10.1016/j.nutres.2022.04.001. Epub 2022 Apr 10. PMID: 35,588,611. ³⁶

Abbreviations: RCT, Randomized Controlled Trial; MetS, Metabolic Syndrome; T2DM, Type 2 Diabetes Mellitus; HgA1c, Hemoglobin A1c; BP, Blood pressure; TMAO, Trimethylamine N-oxide.