

September 10-11, 2018
Prague, Czech RepublicDipak P Ramji, J Food Nutr Popul Health 2018 Volume: 2
DOI: 10.21767/2577-0586-C3-007

MECHANISMS UNDERLYING THE BENEFICIAL ACTIONS OF NUTRACEUTICALS IN ATHEROSCLEROSIS

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Cardiovascular disease is responsible for more global deaths than any other disease. Atherosclerosis, a chronic inflammatory disorder of the vasculature, is the underlying cause of cardiovascular disease. Current pharmaceutical therapies against atherosclerosis such as statins that lower plasma low-density lipoprotein (LDL) cholesterol are not fully effective and associated with considerable residual risk along with other issues such as side effects. In terms of alternatives, there have only been very few successes (e.g. cholesterol absorption inhibitor ezetimibe, expensive monoclonal antibodies against the protease proprotein convertase subtilisin/kexin type 9, which is involved in the degradation of the LDL receptor) but many failures. This has generated substantial recent interest in the use of nutraceuticals in the prevention of atherosclerosis and as an add-on with current pharmaceutical therapies. However, a thorough understanding is required of the molecular mechanisms underlying the beneficial actions of nutraceuticals together with large clinical trials. The former forms the focus of research in my laboratory using a combination of *in vitro* assays that recapitulate various key steps associated with atherosclerosis, such as pro-inflammatory gene expression, foam cell formation, endothelial cell dysfunction and smooth muscle cell proliferation/migration and mouse model systems *in vivo*. We are currently investigating the mechanisms underlying the beneficial actions of polyunsaturated fatty acids, polyphenols, flavanols and probiotics. These will be presented with particular focus on biochemical changes and underlying molecular mechanisms.



Biography

Dipak Ramji has received his BSc (Hons) degree (Biochemistry) and his PhD from University of Leeds. This was followed by Post-doctoral research at the EMBL (Heidelberg) and IRBM (Rome) with fellowships from the Royal Society and the EU. He joined Cardiff University in 1992 and is currently a Professor of Cardiovascular Science at the Cardiff School of Biosciences. His research is focused on understanding how the immune and inflammatory responses regulate macrophage processes in atherosclerosis with the goal of attaining deeper mechanistic insight and identifying preventative/therapeutic agents. He has received continuous funding from the British Heart Foundation since 1997 and published over 150 research articles (H index 32 and i10 index 63 with over 5300 citations). He is an Editorial Board member of 16 international journals; regular organizing committee member, speaker and track/session chair at international conferences on heart disease; and involved in grant evaluation of over 20 organizations. He has supervised over 25 PhD students.

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