

Current approaches in the prevention and treatment of atherosclerosis and cardiovascular disease

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Abstract

Cardiovascular diseases (CVD), such as myocardial infarction, cerebrovascular accidents and peripheral vascular disease, are the leading cause of global morbidity and mortality. Atherosclerosis, an inflammatory disorder of the vasculature that is associated with a build up of fatty deposits and cellular debris in medium and large arteries, is the underlying cause of CVD. Lifestyle changes and pharmaceutical intervention have led to some recent reduction in morbidity and mortality from CVD at least in the western world. However, it is likely that this will reverse in the future because of global increase in risk factors such as obesity and diabetes. Current pharmaceutical treatments against atherosclerosis are associated with a considerable residual risk for CVD together with various side effects. In addition, many pharmaceutical agents against promising targets have proved disappointing at the clinical level. It is therefore important that the molecular basis of atherosclerosis is fully understood and new preventative and therapeutic agents or targets are identified.

Research in my laboratory is focused at investigating the molecular mechanisms underlying the impact of the inflammatory response on atherosclerosis with emphasis on macrophages, which are involved in all stages of the disease, and the actions of preventative and therapeutic agents. Our research has particularly provided novel insights into the actions of nutraceuticals, including lipids and their metabolites. This presentation will discuss the molecular basis of atherosclerosis and opportunities for drug discovery, current therapies against the disease and their limitations, emerging therapies targeting lipid metabolism and the inflammatory response, and the potential of nutraceuticals as preventative/therapeutic agents.

Biography

Dipak Ramji is Professor of Cardiovascular Science at the School of Biosciences in Cardiff University. He received his BSc (Hons) degree (Biochemistry) and his PhD (Molecular Biology) from the University of Leeds. This was followed by post-doctoral research at the European Molecular Biology Laboratory (Heidelberg) and the Istituto di Ricerche di Biologia Molecolare P. Angeletti (Rome) with fellowships from the Royal Society and the EU. He joined Cardiff University in 1992 and completed 25 years of service in August 2017. His research is focused on understanding how the immune and inflammatory responses regulate cellular processes in heart disease with the goal of attaining deeper mechanistic insight and identifying preventative/therapeutic agents. His research has been funded by several organisations and received continuous funding from the British Heart Foundation since 1997. He has published over 150 research articles (h index 35 and i10 index 70 with over 6000 citations). He is an Editorial Board member of 16 international journals; regular organising committee member, speaker and track/session chair at international conferences on heart disease; involved in grant evaluation for over 20 organisations; and supervised over 25 PhD students. In addition to research, he is involved in teaching and administration, including Postgraduate Tutor for the Biomedicine division at the School of Biosciences and external examiner for Biochemistry and Biomedical Sciences at the University of Reading and King's College London.