

Title: Role of Vitamin D on the modulation of atherogenesis: an in vitro model of monocyte-derived macrophages

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Lipid accumulation in monocyte-derived macrophages leads to the development of foam cells and the following formation of atherosclerotic plaque. Among the several functions exerted by calcitriol (1,25-$(OH)_2D_3$),the active metabolite of vitamin D, it seems to have a protective role against atherosclerosis through the modulation of immune system. However, the mechanisms of action underlying this effect are not elucidated.
The aim of this study is to evaluate the capacity of calcitriol to modulate the lipid accumulation in an *in vitro* model of monocyte-derived macrophages.
Monocytes were differentiated to macrophages and treated with a fatty acids solution (500µM of oleic/palmitic) and calcitriol at different concentrations (0.1, 1, 10, 50 and 100nM). The lipid accumulation was evaluated through a lipophilic dye (Nile Red) capable to stain intracellular lipid droplets. The protein levels of the markers related to the lipid metabolism were assessed by using ELISA kits. The results obtained have been analysed through the ANOVA.
The findings showed the capacity of 1,25-$(OH)_2D_3$ to reduce lipid accumulation at the concentrations of 50 e 100nM ($p<0.01$), while no effect has been observed at lower concentrations (0.1, 1, 10nM). The calcitriol tested at 50nM determined an increase in ABCA1, CPT1A and PPAR-γ, while a reduction in CD36 and C/EBP-beta protein levels ($p<0.01$).
Calcitriol seems to exert a beneficial effect by reducing lipid accumulation in macrophages. Its effect could be mediated by the modulation of different proteins involved in the lipid metabolism at the level of atherosclerotic plaque, suggesting a potential protective role of 1,25-$(OH)_2D_3$ on atherosclerosis.

Biography

Mirko Marino has completed his PhD in "Nutritional Sciences" at the age of 26 years from University of Milan, continuig as postdoctoral researcher at the Department of Food, Environmental and Nutritional Sciences (DeFENS). He has published 16 papers in international peer-review journals and has been serving as a reviewer member of different journals. He is included in the COST Expert database to contribute to the evaluation and any other scientific activities related to COST Association (European Cooperation in Science and Technology).

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