The effects of combination treatment of MDOCTM and statin on atherogenic process in experimental model of atherosclerosis.

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MDOC™ is micro dispersed derivatives of oxidized cellulose (polyanhydroglucuronic acid - PAGA). This semi-natural, biocompatible, bioabsorbable, non-acidic, sterile powder has been in use as a topical haemostatic agent since 1998. In this rigorous work we wanted to evaluate whether MDOC™ affects cholesterol levels, inflammatory markers and cell adhesion molecule expression in both blood and vessel wall in cholesterol fed apoE-deficient mice.

Male apoE-/- mice were divided into 4 groups. Control group (n=8) of mice consumed an atherogenic diet for 4 weeks. The same diet was used in other animals except MDOC™, atorvastatin and MDOC™ together with atorvastatin were added to the diet.

Analysis of blood cholesterol, IL-6 in blood and ICAM-1 endothelial expression in aortic sinus were performed by means of biochemical, ELISA and immunohistochemical analysis.

LDL cholesterol levels were significantly decreased in all drug treated groups when compared with control animals. Moreover MDOC™ treatment significantly increased HDL cholesterol in comparision to control group. ELISA analysis revealed significant decrease of IL-6 levels MDOC™ group and atorvastatin group. Endothelial expression of ICAM-1 in aortic sinus was significantly decreased only in combination MDOC™ +atorvastatin group. On the contrary combination treatment failed to affect total cholesterol levels, IL-6 levels in blood.

This study demonstrates potential hypolipidemic and anti-inflammatory properties of MDOC™ in apoE-deficient mice. Moreover we demonstrated particular benefit of MDOC™ + atorvastatin combination treatment; however other studies must be made to elucidate its possible use in humans.