ANTI-ATHEROSCLEROTIC EFFECTS OF NUTRACEUTICAL COMPOUND "OXXYNEA® OMD" IN HYPERCHOLESTEROLEMIC MODEL OF HAMSTER

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Aim: In the last decades, the use of nutraceutical compounds is spreading in different therapeutic fields, such as in the treatment of atherosclerosis. Aim of this study is to evaluate the effects of the Oxxynea® OMD compound on atherosclerotic plaque development, lipid and lipoprotein profile in hypercholesterolemic hamsters. Oleactiv® is a nutraceutical compound patented by Fytexia Company. Experimentations are part of an industrial project, and Oxxynea® OMD composition is secreted.

Material and Methods: 30 Golden syrian hamsters were divided in 3 groups. Standard group (STD group), fed with normolipidemic diet, received daily vehicle for 12 weeks. The remaining groups, fed with a hypercholesterolemic diet (2 g/kg of cholesterol), received daily vehicle (CTRL group), or Oxxynea® OMD (OMD group). After sacrifice, the aortic arch was dissected and stained with Oil-Red-O to evaluate aortic fatty streaks. In addition, plasmatic HDL, total cholesterol (TC), non-HDLc, triglycerides (TG) were analyzed. We evaluated total efflux, ABCA1-mediated efflux and passive diffusion efflux using a radiolabelled technique in murine macrophages J774.

Results: OMD administration induced a significant decrease of foam cells infiltration (-1.9% of aortic total area), indicating a significant reduction of lipid deposits by -69% ($P<0.0001$) of Aortic Fatty Streak Area compared to CTRL group. Hamsters of Ola group showed decrease of TC (-1,04mmol/L), non-HDLc (-1,14mmol/L) and a significant decrease of TG (-1,21mmol/L) vs CTRL group. Conversely, HDL-C levels are similar in two groups. Interestingly, plasma of OMD group showed an higher passive diffusion in comparison with CTRL group (28,44%, $p<0,05$). In addition, ABCA1-mediated efflux of sera treated with Oxxynea® OMD was increased vs CTRL group (14,5%). Overall, OMD induced a significant increase of total Cholesterol Efflux Capacity (17,33%, $p<0,05$) vs CTRL group.

Conclusions: Results show that the administration of Oxxynea® OMD reduces atheroma development and has positive effects on lipid profile of an animal model more akin to human, compared to other animal models. In addition, the increased CEC, due to an increased ABCA1-mediated efflux by Oxxynea® OMD, may be a potential anti-atherosclerotic mechanism, underlying the atheroma reduction observed.