Evaluation of flaxseed effects on non-alcoholic fatty liver disease (NAFLD) in rabbits submitted to a hypercholesterolemic diet

Caroline Tatim Saad¹, Dalton Bertolim Précoma², Alexandre Bueno Merlini³, Sérico Ossamu Ioshii⁴, Ana Flávia Champoski⁵

¹State University of Ponta Grossa, Paraná, Brazil; ²Pontifical Catholic University of Paraná, Paraná, Brazil; ³Medical Student in State University of Ponta Grossa, Paraná, Brazil; ⁴Pontifical Catholic University of Paraná, Paraná, Brazil; ⁵Pontifical Catholic University of Paraná, Paraná, Brazil

*Corresponding author: Alexandre Bueno Merlini, PhD, Department of Medicine, State University of Ponta Grossa. Av. Balduíno Taques, 1441, ap.43 Centro, Ponta Grossa, Paraná 84-010-050, Brazil

Submission date: June 26, 2014; Acceptance date: October 27, 2014; Publication date: October 27, 2014

ABSTRACT

Background: The aim of the present study is to evaluate the role of flaxseed in non-alcoholic fatty liver disease, as well as on the lipid profile in rabbits submitted to hypercholesterolemic diet.

Subject and Methods: 32 male rabbits, weighing approximately 1.5kg and averaging four months of age, were distributed into three groups. Group 1 received standard food plus 0.5% of cholesterol from dried egg, during 8 weeks. Group 2 obtained the same diet in the first 4 weeks, and 8mg/kg of ground flaxseed was added in the remaining weeks. Lastly, group 3 was fed with the previous group’s increased diet throughout the entire period. In the follow-up, the animals were euthanized, and liver blades were prepared to evaluate the histopathologic study. The evaluation score of NAFLD (ESN), as well as plasma levels of total cholesterol, LDL-cholesterol, HDL-cholesterol, triglycerides and body weight, were all determined.

Results: Increased levels of total cholesterol were obtained in both groups, with the smallest variation found in G3 (p=0.002). This variation was also found when the levels of LDL-cholesterol were assessed (p=0.001). There was a reduction of triglyceride levels at the end of the study in G3 (p=0.008). A variation was noticed between the ESN groups, but the induced reduction was not statistically significant.

Conclusion: Further studies are necessary, in order to elucidate the effects of flaxseed in NAFLD as well as in diseases that have risk factors for the development of the disease.
Keywords: non-alcoholic fatty liver disease, flaxseed, experimental study, functional food