EFFECTS OF *Moringa oleifera Lam.* LEAF FLOUR SUPPLEMENTATION ON METABOLIC CHANGES INDUCED BY FRUCTOSE CONSUMPTION IN RATS

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INTRODUCTION

Recent evidence suggests that diets composed of industrialized foods high in fructose, particularly soft drinks, can induce metabolic disorders, especially in children and young people (Hannou et al. 2018) *Moringa oleifera L.* is an unconventional food plant that has several phytochemical compounds and its leaves can be used as food in form of flour (Kushwaha; Chawla; Kochhar 2012). Based on studies of the plant in the treatment of diabetes (Gupta et al. 2012) and dyslipidemia (Waterman et al. 2014), this study evaluated the protective effects of supplementation of *Moringa oleifera* leaf flour (MOF) on initial metabolic changes induced by fructose consumption in young rats.

MATERIAL AND METHODS

Male *Wistar* rats 21 days after weaning, were distributed in 3 groups (n = 9): 1) Control (normal ration + water); 2) Fructose (normal ration + fructose (20%) added to water and 3) Feed with *M. oleifera* flour (MOF 20% added to chow) + fructose (20%) added to water. All animals received the different treatments for 4 weeks. Weight, food intake and water were evaluated. Insulin resistance test was performed. The animals were submitted to blood collection for assessment of markers of liver function, blood glucose and lipid profile. The hepatic, pancreatic and adipose tissues were collected for histological evaluation. Lipids, Malondialdehyde, GSH and antioxidant enzymes were quantified in the hepatic tissue, as well as liver antioxidant capacity through the FRAP method (Ferric Reducing Antioxidant Power Assay) (CEUA nº017/2017).

RESULTS

There were no differences in weight among the groups at the end of the study. Supplementation with MOF increased HDL (High Density Lipoprotein), did not allow elevation of serum lipids and prevented hepatic lipid accumulation. The addition of MOF to the rats chow diet further protected pancreatic cells, improved cellular insulin sensitivity and reduced blood glucose. As a consequence, there was less lipid peroxidation in liver cells and normalization of adipocyte cell volume occurred.

CONCLUSIONS

Taken togheter, the data herein obtained allow us to conclude that the addition of MOF to the chow may have inhibited metabolic dysfunctions in the rats and restored hepatic antioxidant activity. MOF supplementation may become a potential tool to minimize the damage related to excessive fructose consumption.

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