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## Kefir administration reduced progression of renal injury in STZ-diabetic rats

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Diabetes mellitus has become a serious public health problem that affects millions of individuals worldwide. The World Health Organization predicts that 439 million people will have this disease in 2030, and Brazil was listed 5th of 10 countries estimated to have the highest number of people with diabetes, affecting approximately 12.7 million Brazilians in 2030. Kefir is a beverage made from milk that is fermented by a complex mixture of bacteria, including various species of lactobacilli and yeasts. It has been considered a probiotic due to its antioxidant and anti-inflammatory properties. The aim of this study was to investigate the effects of Kefir on the production of nitric oxide and oxidative stress and renal damage in STZ-induced diabetic rats. Diabetes was induced in adult male Wistar rats with streptozotocin (45 mg/Kg, iv). The animals received Kefir (K) or its vehicle 1.8 mL/day by gavage, starting from 5th day after induction of DM for 8 weeks. The animals were distributed into 4 groups (n=4 each): control (CTL); control Kefir (CTRK); diabetic (DM) and diabetic Kefir (DMK). Before and after treatment, blood and urine were collected for 24 hours to determine the thiobarbituric acid reactive substances (TBARS), NO, C-reactive protein (CRP), creatinine, urea and proteinuria. The data were processed statistically by one-way ANOVA with post-Newman-Keuls test ( $P < 0.05$ ). After sacrificing the animals, the renal cortex was removed for histology, oxidative stress and NOS evaluation. Comparing to CTL rats, DM rats had shown increased levels of glycemia, plasmatic urea, proteinuria, renal NO, superoxide anion, TBARS, and plasmatic CRP; also had been demonstrated a reduction in urinary urea, creatinine, and NO. However, DMK rats had shown a significant improvement in most of these parameters. Despite of lack of differences observed in the expression of endothelial NO synthase (eNOS), the expression of inducible NO synthase (iNOS) was significantly lower in DMK group when compared to DM rats, as assessed by Western blot analysis. Besides that the DMK group presented a significant reduction of glycogen accumulation within the renal tubules when compared to the DM group. These results indicate that Kefir treatment may contribute to better control of glycemia and oxidative stress, which is associated with the amelioration of renal function, suggesting its use as a non-pharmacological adjuvant to delay the progression of diabetic complications. Thus, Kefir may play a role in slowing the metabolic changes that contribute to DN.

## Biography

Cristina Stewart Bogsan, Professor of Food Technology, Department of Biochemical Pharmaceutical Technology, Faculty of Pharmaceutical Sciences, University of São Paulo and Researcher from TecLaFA, Technology of Dairy Functional Food and Analogues Lab, has graduated at Pharmacy and Biochemistry from Universidade Paulista in 1999, obtained her Master's degree at Immunology and Microbiology from Universidade Federal de São Paulo in 2002 and has completed her PhD from Universidade de São Paulo in 2012. She has experience in Science and Food Technology, Microbiology and Immunology, focusing on Immunology and in Science and Technology of the Food, for the most part on Science and Technology of the Dairy Functional Food, acting on the following subjects: fermented milk, matrix-probiotic-mucosa interaction, *Bifidobacterium animalis* subsp. lactis, B-1 cells, immune stimulation and inflammation.

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