Interaction between Diabetes and Iron Supplementation on Lipaemia, Glycaemia and Oxidative Stress in Hamsters

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Increased iron stores have been found to predict diabetes development. Iron-induced damage might also modulate the development of chronic diabetes complications. The relationship is bi-directional - iron affects glucose metabolism, and glucose metabolism influences several iron metabolic pathways. The clari?cation of the mechanisms that regulate this interaction could contribute to improve the management of diabetes and to anticipate its possible complications. Therefore, this study aimed to assess the interaction between diabetes and iron supplementation on serum lipid profile, glucose, oxidative stress and antioxidant defenses in hamsteres. The animals were divided into 4 groups: The control group (C) was fed the standard diet AIN-93; the CI group was fed the standard diet supplemented with iron carbonyl 3%; the diabetic group (D) was fed with standard diet and streptozotocin (50mg/kg); and the DI group was fed the standard diet supplemented with iron carbonyl 3% and streptozotocin (50mg/kg). The hamsters were fed the diets for 8 weeks and streptozotocin injection was administrated at 7th week. Diabetes and iron interaction altered iron homeostase, decreasing DI group serum iron values to a level similar to control. This same association reduced cholesterol and triacylglycerols levels and increased kidney TBARS values ($P < 0.05$). Our results suggest that an association between diabetes and iron causes more alterations on serum lipid profile, iron homeostasis and oxidative stress than the isolated factors.