Effects of the Interaction of Diabetes and Iron on Iron Stores in Heart and Pancreas

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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 clarification of the mechanisms that regulate this interaction could contribute to improve the management of diabetes and to anticipate its possible complications. Furthermore, the iron homeostasis plays an important role in cardiac function. This study evaluated the effects of the interaction of diabetes and a carbonyl iron supplemented on iron stores in the heart and pancreas. Rats were divided into four groups: Control group (C) was fed the standard diet (AIN-93), CI group was fed the standard diet and iron dextran injections (dextran iron 100g Fe²⁺/L), Diabetic group (D) was fed with standard diet and STZ and DI group was fed the standard diet, iron dextran injections and STZ. STZ injections were administrated in the experiment beginning and iron injections were given every 5 days, totaling 40mg of iron. The determination of total iron using the method of orthophenanthroline revealed groups CI and DI values increased approximately in 1.8 e 9.2 times in the heart and in the pancreas, respectively, in relation to their controls. The histological analysis showed the slides stained by Perls, marking iron stores, a greater concentration of iron in the heart and pancreas, 1.9 and 1.6 times, respectively, of group DI in relation to CI group. Histological results suggests that diabetes and iron interaction iron may increase iron stores may be a factor responsible for the worsening of diabetes and its complications.

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