Abstract

Diabetes mellitus (DM) is a group of metabolic disorders characterized by chronic hyperglycemia resulting from relative or absolute insulin deficiency with or without insulin resistance. As anxiolytics may have influence on glycemic control in diabetics, the present study was conducted to investigate the possible influence of diazepam and buspirone in streptozotocin-induced DM and their possible interactions with rosiglitazone or glimepiride. Diabetes was induced by streptozotpcin (50 mg/kg i.p.). Rats were classified into 10 groups namely: normal control, diabetic control, rosiglitazone (10 mg/kg p.o.), glimepiride (10 mg/kg), diazepam (5 mg/kg) buspirone (20 mg/kg i.p.) or combination of diazepam or buspirone with rosiglitazone or glimepiride. All test drugs were given as single as well as repeated dose for one and two weeks. Diazepam significantly improved the effect of rosiglitazone or glimepiride on the levels of serum glucose, insulin, C-peptide, liver glycogen content and on oxidative stress biomarkers including serum lipid peroxides, blood glutathione levels and blood superoxide dismutase activity of diabetic rats. In conclusion, diazepam increased the antidiabetic and the antioxidant actions of rosiglitazone or glimepiride which may be of considerable value in the treatment of diabetes mellitus. There was no significant interaction between rosiglitazone or glimepiride and buspirone on the measured parameters, so, buspirone can be safely administered as an anxiolytic in diabetic patients treated with rosiglitazone.

Abstract

In the present study, the effects of two antianxiety drugs namely diazepam and buspirone and two antidiabetic drugs namely rosiglitazone and glimepiride were investigated on several parameters related to diabetes. The antianxiety drugs were given separately or in combination with the antidiabetic drugs. The effect was studied after single and repeated dose administration for one and two weeks. The effects of the test drugs were estimated on serum glucose, serum insulin, serum C-peptide, liver glycogen, serum MDA, blood GSH and blood SOD. Furthermore, the effect of test drugs and their combination was studied on swimming test. Diabetes was induced by STZ in a dose of 50 mg/kg. The present study revealed that there is an additive interaction between diazepam and rosiglitazone or glimepiride which is of value in the treatment of diabetes mellitus. Such additive effect has the advantage of reduction in the dose of the two drugs when coadministered together leading to decreased toxicity of the two drugs and reduced economic cost. This conclusion cannot apply to buspirone as no interaction was observed between buspirone and rosiglitazone or glimepiride. This indicates that the coadministration of buspirone with rosiglitazone or glimepiride does not produce serious reactions on serum glucose, insulin and C-peptide levels. However, this conclusion cannot be considered final except after clinical investigation to confirm the action and this conclusion.