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Research Article

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**EFFECT OF MELATONIN, PIOGLITAZONE AND THEIR  
COMBINATION ON FRUCTOSE INDUCED-INSULIN RESISTANT  
DIABETES IN RATS.**

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**ABSTRACT**

*Present study investigated the effects of melatonin, pioglitazone and their combination on fructose induced insulin resistant diabetes in rats. Administration of fructose 10% w/v ad libitum in a feeding bottle for 20 days produced insulin resistant diabetes, dyslipidemia and oxidative stress. Increase in serum glucose, insulin, total cholesterol, triglycerides and decrease in HDL levels were observed. In addition to insulin resistance, diabetes induced oxidative stress was observed by increase in TBARS and decrease in GSH levels. Treatment with pioglitazone (5mg and 10mg/kg/day p.o.), melatonin (100µg and 200µg/kg/day i.p.) and pioglitazone (5mg/kg/day p.o.) in combination with melatonin (100µg/kg/day i.p.) were started in insulin resistant diabetic rats after 20 days of fructose administration. The treatment with pioglitazone and melatonin alone and their combination attenuated fructose-induced insulin resistant diabetes as observed by a decrease in serum glucose, serum insulin and lipid levels. Further these results demonstrated that serum glucose, insulin and lipid levels were significantly lowered ( $p < 0.05$ ) in combination group as compared to fructose treated groups as well as with individual groups of pioglitazone and melatonin. The combination group improved the levels of TBARS and GSH also. These effects are probably due to reduction of insulin resistance via decrease in oxidative stress and control of hyperglycemia*

**Key words:** Insulin resistant diabetes, Lipid peroxidation, Melatonin, Pioglitazone