**LS-11-P-5835 Melatonin, quercetin and resveratrol attenuates oxidative stress and hepatocellular injury in streptozotocin-induced diabetic rats**

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Aim: In this study we aimed to investigate healing effects of melatonin, quercetin and resveratrol on hepatocellular injury in streptozotocin-induced experimental diabetes via histological and biochemical methods.

Material and Methods: Thirty-five adult male Wistar albino rats divided into 5 groups each containing 7 rats as follows: Group 1: Control, Group 2: Diabetes (Streptozotocin 45 mg/kg/single dose/ip), Group 3: Diabetes+Melatonin (10 mg/kg/30 days/ip), Group 4: Diabetes+Quercetin (25 mg/kg/30 days/ip) and Group 5: Diabetes+Resveratrol (10 mg/kg/30 days/ip). Melatonin, quercetin and resveratrol dissolved in 4% ethanol. Initial and final blood glucose levels and body weights were measured. At the end of the experimentation, rats were sacrificed by ketamine anesthesia. The tissue samples were fixed in 10% formalin. Following routine tissue process, livers were embedded paraffin. Paraffin blocks were cut at 5 µm, mounted on slides stained with hematoxylin-eosin, Periodic acide schiff and Masson’s trichrome. Histopathologic damage score was calculated in regard to congestion, sinusoidal dilatation, inflammation, fibrosis and loss of glycogen. Maximum score was 15. Tissues were examined using a Leica DFC280 light microscope and a Leica Q Win Image Analysis system (Leica Micros Imaging Solutions Ltd., Cambridge, UK). Tissue biochemical (oxidant/antioxidant) parameters as malondialdehyde (MDA), superoxide dismutase (SOD), catalase (CAT) and glutathione (GSH) were examined.

Results: The diabetic rats had significantly higher blood glucose levels than the control group (p<0.05). In diabetic rats, body weights were significantly decreased when compared with the control rats (p<0.05). There was no significant difference in body weights among diabetic groups (p>0.05). The control group was normal in histological appearence. However, histopathological alterations were detected such as congestion, sinusoidal dilatation, inflammation, fibrosis and loss of glycogen content in the diabetes group. On the other hand, in treatment groups, histopathological changes markedly reduced. The levels of MDA increased and the enzyme activities of CAT, SOD and GSH levels decreased in the diabetes group, while melatonin, quercetin and resveratrol treated diabetic rats showed an increase of CAT activity and GSH level and a decrease of MDA levels. There was no significant difference in SOD activity among treatment groups (p>0.05).

Conclusion: In view of the histological and biochemical findings, we conclude that STZ-induced hepatocellular injury should be prevented by melatonin, quercetin and resveratrol administration probably via their antioxidant actions.

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