English Summary

The present study was performed to evaluate the effect of two trace elements namely zinc sulfate and vanadyl sulfate and two antidiabetic drugs namely glimepiride and rosiglitazone on certain parameters related glycemic status and oxidative stress in STZ-diabetic rats. The trace elements were given separately or in combination with the antidiabetic drugs. The effect was studied after single dose as well as after two weeks of daily dose administration. The parameters estimated were serum glucose level, serum insulin level, liver glycogen content, serum MDA, blood GSH and blood SOD levels. Furthermore, the effect of test drugs and their combination on glucose (6 mmol/L)-stimulated insulin secretion from isolated rat pancreatic islets was studied.

From the previous findings it could be concluded that:

1- Zinc sulfate and vanadyl sulfate possess hypoglycemic actions in diabetic rats.
2- Zinc sulfate and vanadyl sulfate possess antioxidant actions in diabetic rats.
3- The hypoglycemic action of zinc sulfate and vanadyl sulfate is not due to insulin release but is probably due to its extrapancreatic effects.
4- Zinc sulfate and vanadyl sulfate did not affect the hypoglycemic action or antioxidant action of glimepiride or rosiglitazone when given together in the selected doses. This indicates that the coadministration of zinc sulfate or vanadyl sulfate with glimepiride or rosiglitazone does not produce serious reactions on serum glucose and insulin levels.

In conclusion, the current results clearly indicate the beneficial effects of zinc sulfate or vanadyl sulfate in both controlling hyperglycemia and the protection against oxidative stress in diabetes.

According to the findings of the present study, it could be stated that there is no significant interaction between zinc sulfate or vanadyl sulfate and

glimepiride or rosiglitazone when used in combination on any of the aforementioned parameters. It follows that the two drugs can be taken together safely without fear of any serious reactions. The absence of additive action between the two drugs observed in this study may be attributed to the use of doses which give maximal response, thus no potentiation of action could be observed.

However, this conclusion cannot be considered final except after clinical investigation to confirm this conclusion for efficacy and safety.