LAICM

LATIN-AMERICAN INORGANIC CHEMISTRY MEETING

SANTIAGO DE COMPOSTELA (SPAIN)

13 - 17 September 1993

ABSTRACTS

THE HYPOGLYCEMIC EFFECT OF COPPER (II) COMPLEXES

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The hypoglycemic effect of copper (II) complexes such as $Cu(oAc)_2$ $(Imidazole)_4$, $Cu(OAc)_2$ $(2\text{-methyl Imidazole})_2$, $Cu_2(OAc)_4(N\text{-methyl Imidazole})_4 \times 6H_2O$ and $Cu(OAc)_2(1,2\text{-dimethyl Imidazole})_2$ was tested on normal and diabetic rats.

Copper compounds were administered to fasted rats by I.M. and I.P. injection, blood samples were taken from the tail tip at various intervals following injection, for the measurement of blood glucose using the glucose oxidase method.

Injection of various doses of $Cu(oAc)_2$ $(Imidazole)_4$, ranging from 10-60 mg/kg body weight, to overnight fasted rats have reduced blood glucose levels in a dose dependent manner which reached its maximum hypoglycemic effect after 3 hours. This effect was completely reversible after 24 hours. Higher doses of the same compound (100 mg/kg) caused a hypoglycemic shock which was irreversible and even lethal. The hypolgycemic changes were more profound after intraperitoneal injection of the copper II complexes.

Similar changes in blood glucose levels were achieved using $Cu(OAc)_2$ $(2\text{-methyl Imidazole})_2$. The same pattern of change but less effective was observed with $Cu_2(OAc)_4(N\text{-methyl Imidazole})_4 \times 6H_2O$ and $Cu(OAc)_2(1,2\text{-dimethyl Imidazole})_2$. This indicates that the hypoglycemic activity varies with the type of imidazole ligand in complexes. Inorganic forms of copper like copper chloride, copper acetate as well as the parent ligand imidazole have no significant effect on blood glucose levels.

Injection of copper acetate imidazole to streptozotocin induced diabetic rats caused a reduction in glucose values observed during glucose tolerance test.