

## Protecting Embryonic Development in Diabetic Pregnant Rats.

Sonia Clapés Hernández<sup>1</sup>, Carlos Luis Peres Hernández<sup>1</sup>, Tammy Fernandez Romero<sup>1</sup>, Hamlet Camacho Rodríguez<sup>2</sup>, Gisell Pentón Rol<sup>2</sup>, Gipsis Suarez Román<sup>1</sup>

<sup>1</sup> Basic and preclinical science institute “Victoria de Girón”. Medical university of Havana.

<sup>2</sup> Center of genetic engineering and biotechnology of Cuba

**Introduction:** Recently Erythropoietin (EPO) has been found to regulate survival and cyto-protection of different cells types.

**Objective:** Evaluate the effect of low sialic EPO (IsEPO) in embryonic development, genetic expression and glucose homeostasis in diabetic pregnant rats.

**Materials and methods:** Female rats were injected with Streptozotocin (60 mg/Kg B.W.) to induce diabetes. Two weeks after diabetes diagnosis, rats were paired with healthy males. Diabetic pregnant rats were included in three groups. Group A with diabetic, non-treated pregnant rats, group B and C treated with two different doses of isEPO by sub- cutaneous way; 0,5 and 1,0 mg/kg of body weight. The schedule was repeated in alternated days from the beginning of pregnant until 12 gestational days. In these day the dams was killed and their embryos was separated from decidua for morphologic studies. The decidua tissue was used for genetic studies. Specifically we studied the expression of genes that are very active in the early stages of placentar implantation and development. The genes expression studied were NFE2L2, HIF1A, VEGFA, BAX, INOS and BCL2. Ethics aspect was carefully considered.

**Results:** Our result show a significant increase of reabsorption and early pregnancy loss (1.37 fold higher) in diabetic rat treated with placebo when compared to control. On the other hand, the diabetic rats treated with IsEPO show a decrease of reabsorption and early pregnancy loss when compared with those treated with placebo, with a risk of 0.8 fold lower. The glycaemia was lower in diabetic rats treated than in rats treated with placebo. The decrease was detected as early as day 6 of treatment and was higher at day 12 when diabetic rats with placebo show a glycaemia of 24.14 mM while those treated with IsEPO had 17.92mM/L. Relative expression of BCL2 gen was positively regulated and no other genes were modified in those tissues. It is know that Epo should act on apoptosis way

and control crucial process in right moment of development. The placental formation is an challenge on diabetic pregnant rats. The implication that these changes could have in the development of the embryo is yet to demonstrate.

**Conclusions:** In conclusion, these results show that 1s EPO ameliorate glucose homeostasis in diabetic pregnant rats and it is the first report of the protection of embryonic development in diabetic pregnant rats.

**Keywords:** Erythropoietin, embryonic development, genetic expression, glucose homeostasis, diabetic pregnant rats.