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The effect of L-arginine on mice placenta

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Abstract

L-arginine-nitric oxide pathway has emerged as novel regulators of several vital roles in the reproductive function comprise pregnancy events, such as placental development. This study was done to pharmacologically enhance the performance of female reproductive system by using L-arginine powder as forerunner of nitric oxide. The study protocol consists of total number of 96 pregnant mice divided into two main groups equally (48 animals per group) and handled as follows: 1st Control group given normal saline orally daily and 2nd L-arginine dosed group 200 mg/kg BW 20% orally daily, both groups were randomly divided into four subgroup according to dosed period of pregnancy term, the dosed period were 1-15 days, 7-15 days, 7-21 days and 15-21 days.

Several parameters were evaluated and displayed the following results:

L-arginine concentration % in uterine tissue was elevated their levels associated with increase body, uterine, placenta and fetus weights. That presumably was controlled by an increase food and water intakes well as hormonal levels (estrogen and progesterone) mainly at 7-21 days and 15-21 days of gestation dosed periods. Those results proved changes in the histological and stereological profile was illustrated the activity and enlargement of placental layers acquaintance with increasing blood vessels (angiogenesis and vasodilation) and vascular density (%) in especially in 7-21and 15-21 of dosed gestation periods led to an increase placental volume and geometric parameters(cm), weight(gm) and proportional thickness (cm), vascular density, blood vessels. Fetal traits parameters, displayed uppermost statistical values of fetuses and weights in all gestation periods expressly in periods (15-21) achieved best results. Also increases the other parameters: blood volume, steriometry values, histological assessments and alkaline phosphatase and lactogens values. The endpoints of this study presented the L-arginine donated NO which was capable of increasing remodeling blood supply and improvement of some reproductive phenotype of animal models and superior to the produced vital fetuses.