Prenatal malnutrition-induced functional alterations in callosal connections and in interhemispheric asymmetry in rats are prevented by reduction of noradrenaline synthesis during gestation

Soto-Moyano, Rubén

Alarcon, Sergio

Hernández, Alejandro

Pérez, Hernán

Ruiz, Samuel

Carreño, Paz

Kusch, Claudia

Belmar, Jorge

Prenatal malnutrition results in increased concentration and release of central noradrenaline, a neurotransmitter that is an important regulator of normal regressive events such as axonal pruning and synaptic elimination. This suggests that some of the functional disturbances in brain induced by prenatal malnutrition could be due at least in part to increased noradrenaline activity that may enhance regressive events during early stages of development. To test this hypothesis we studied whether chronic administration of ?-methyl-p-tyrosine, an inhibitor of tyrosine hydroxylase, to rats during gestation might prevent long-term deleterious effects of prenatal malnutrition on functional properties of interhemispheric connections of the visual cortex, and on asymmetry of visual evoked responses. The experiments were conducted on normal and malnourished rats 45- 50 d of age. Prenatal malnutrition was induced by restricting the food consumption of pregnant rats to 40%, from d 8 postconception