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MEETING ABSTRACTS

ASSESSMENT OF PREVENTIVE USE OF ERGOTHIONEINE IN MODEL OF GESTATIONAL HYPOXIA IN RATS

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Insufficient supply of oxygen to the fetus (prenatal hypoxia) is one of the impacts capable to disrupt the pre- and postnatal development of an affected individual. Even though antioxidant trials largely turned out to be negative, research is still ongoing to find an optimal antioxidant drug to prevent or treat pregnancy related complications. Focus has been on more selective antioxidants and has investigated intracellular sources of oxidative stress during pregnancy. Our study aimed to assess the use of L-Ergothioneine (ERG) as potential new therapy for prenatal hypoxia. ERG serves as an antioxidant and cellular protectant against various kinds of reactive oxygen species.

Pregnant Wistar rats were subjected to hypoxia (10,5% O_2) on gestational day (GD) 20 for 12h. E was administered p.o. in dose 8 mg/kg/day (E1) or 35 mg/kg/day (E2) on GD 6-21. ERG in both doses delayed motor development but facilitated sensory development of hypoxic pups and normalized anxiety- and depression-like behavior of hypoxic males in adulthood. Moreover, E2 normalized the cognitive capacity of hypoxic males. E2 alone, however, delayed sensory development and induced anxiety-like behavior of intact animals. ERG (esp. in dose 35 mg/kg) had a partial compensatory effect on the behavior of rat offspring in adulthood that indicates its possible use in the therapy of behavioral impacts of prenatal hypoxia. Its preventive use, however, does not seem acceptable due to the negative effect of E2 on the behavior of intact animals in our study.

Keywords: gestational hypoxia; behavior; development; animal model; ergothioneine