

METFORMIN DURING ADOLESCENCE ATTENUATES METABOLIC MARKERS IN ADULT RATS OVERFED DURING LACTATION

Gabriel Tezolim¹, Veridiana Mota Moreira, Paulo Cezar de Freitas Mathias

¹gabrieltezolim@gmail.com, PBC/UEM, 0000-0001-6302-1413

The growing prevalence of obesity around the world requires a better understanding of this pathophysiology and strategies to mitigate its deleterious effects. Obesity, related to lifestyle, is also associated with the DOHAD concept or ontogenetic plasticity. On the other hand, the administration of certain drugs in critical periods of development can inhibit or reverse this situation. This study aims to evaluate the effects of metformin treatment during adolescence on the metabolism of overfed rats during lactation. For this purpose, the litters were standardized in 9 pups until the 3rd day of life, and later adjusted in Normal Litters (NL, 9 pups), and Reduced Litters (SL, 3 pups). At 30 days of age, they were subdivided into 4 new groups: NL-saline gavage (NL-S), NL-metformin gavage (NL-M), SL-saline gavage (SL-S) and SL-metformin gavage (SL-M). Metformin treatment (300 mg/kg body weight) was given daily during adolescence (PN30-PN60). At the end of lactation (PN21), SL animals presented a greater body mass and abdominal size. In contrast, at 120 days old, SL-M rats exhibited better peripheral insulin sensitivity, oral glucose tolerance, visceral adiposity, and lipid profile compared to SL-S rats. Metformin did not alter the metabolism of NL animals. In conclusion, treatment with metformin during adolescence, in rats induced obesity by the litter reduction model, was effective in attenuating signs of obesity and/or metabolic syndrome, as well as restoring the glycemic homeostasis of these animals to levels similar to equivalent controls.

Keywords: DOHaD, Obesity, Adolescence

Funding: CNPq, INSPAM/JBS

