THE ANXIETY OF PREGNANT WISTAR RATS SUPPLEMENTED WITH RETINYL PALMITATE IS ASSOCIATED WITH CHANGES IN VITAMIN A STATUS AND OXIDATIVE STRESS PARAMETERS IN THE BRAIN AT THE END OF GESTATION

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Introduction and objectives: Vitamin A is essential for reproduction and development. However, the effects of non-teratogenic doses of vitamin A on mother mental health and behavior, especially emotional reactivity, has not been investigated so far. Thus, the aim of this study was to investigate the anxiety and biochemical profile of pregnant Wistar rat supplemented with non-teratogenic doses of vitamin A (as retinyl palmitate) in the 3rd week of gestation.

Materials and methods: The study protocol was approved in the CEUA-UFRGS ethics committee (number 21563). Pregnant Wistar rats (90 days) were randomly divided into 2 experimental groups (n=18) and supplemented throughout gestation via orogastric gavage: control (saline 0.9%) and retinyl palmitate (25,000 IU/kg/day). All dams were submitted to the Elevated Plus-Maze (EPM) test to assess their profile of anxiety at gestational day (GD) 20. Maternal hormone levels (in serum), retinoid levels (in serum and liver) and redox profile (in serum, liver and brain) were analyzed at GD 21.

Results and conclusions: Supplementation with 25,000 IU/kg/day increased anxiety in pregnant Wistar rats at the end of gestation. The behavioral change was not associated with changes in estrogen, progesterone, testosterone, corticosteroids and prolactin serum levels. On the other hand, the anxiety profile of pregnant Wistar rats supplemented with retinyl esters was associated with increased retinyl esters content in the liver and several changes in the redox profile of different regions of the brain. Altogether, our results suggest that anxiety induced by supplementation with a non-teratogenic retinyl palmitate dose in pregnant Wistar rats is associated with changes in vitamin A status and with changes in brain redox homeostasis. The manifestation of anxiety during pregnancy may have further emotional and physical consequences for both the mother and the fetus.

Acknowledgements: CNPq, CAPES and FAPERGS.
Key Words: Vitamin A, Pregnancy, Emotion.