

REZENDE, Elaine de Pereira. *Leptin, ghrelin and adiponectin in lactating adolescent mothers and their relationship with body composition of the mother and baby*. 2012. 65 p. Dissertation (Master's degree on Food, Nutrition and Health) – Nutrition Institute, University of the State of Rio de Janeiro, Rio de Janeiro, 2012. *Supervisor*: Flavia Fioruci Bezerra.

Resumo

The hormones ghrelin, leptin and adiponectin are related to body weight control and to energy metabolism, and may also be involved with maternal body composition changes during lactation. Ghrelin, leptin and adiponectin are present in human milk and may also play a role in the infant energy metabolism in the first months of life. The aim of this study was to determine blood concentrations of leptin, ghrelin and adiponectin in lactating adolescents and investigate its correlation with milk concentrations of these hormones and with body composition of the mother and their infants. Fifty five lactating adolescents (14 - 19 years old) were enrolled at the “Maternidade Escola UFRJ” health care. Maternal Blood and maternal milk samples were collected after overnight fasting. Anthropometric evaluation and body composition assessment using Dual-Energy X-Ray absorptiometry (DXA) were performed in the lactating mother and their infants (10-58 days postpartum). Blood and milk concentrations of ghrelin, leptin and adiponectin were analyzed by enzymatic immunoassay (ELISA). Kolmogorov-Smirnov test was used to verify the normality distribution of data, which were presented as mean $\pm$ standard deviation. Associations between variables were evaluated using Pearson's correlation analysis. Additionally, associations involving infant body composition were also investigated after adjustments for postpartum period by partial correlation analysis. Concentrations of leptin, ghrelin and adiponectin in milk ($0,51 \pm 0,4$ ng/mL, 106 ± 80 pg/mL, $0,11 \pm 0,69$ μ g/mL respectively) were lower ($p < 0,05$) than in maternal blood ($17,8 \pm 11,9$ ng/mL, 557 ± 392 pg/mL, $5,9 \pm 2,5$ μ g/mL respectively). Leptin in maternal serum correlated significantly with leptin concentrations in milk ($r = 0,38$; $p = 0,01$). Maternal serum leptin was also significantly ($p < 0,05$) associated with maternal total body mass ($r = 0,47$), BMI ($r = 0,46$) and percent of fat mass ($r = 0,56$). Leptin concentration in breast milk was significantly ($p < 0,05$) associated with maternal total body mass ($r = 0,43$), BMI ($r = 0,35$) and percent fat mass ($r = 0,54$). Adiponectin concentration in breast milk was positively associated with pre-pregnancy BMI ($r = 0,31$; $p < 0,05$) and percent fat mass ($r = 0,23$; $p < 0,05$). After adjustments for postpartum period, infant total body fat mass ($r = 0,43$) and percent fat mass ($r = 0,39$) were positively associated with leptin concentration in breast milk ($p < 0,05$). Also, infant body weight ($r = -0,41$), total body fat mass ($r = -0,34$) and percent fat mass ($r = -0,30$) were negatively associated with milk ghrelin ($p < 0,05$). These results suggest that

leptin concentration on breast milk may be involved in the regulation of infant body composition in the first months of life. Breast milk leptin concentration appears to be modulated by maternal body composition. We also observed that milk ghrelin may influence infant fat mass in the postpartum period, independently of mother's body composition.