

Background: Breastfeeding is supposed to exert long-term protection of the infant from the development of civilisation diseases later in life. Adiponectin, leptin and AFABP are candidate proteins in nutritional programming of the infant.

Aim: To determine intraindividual changes of breast milk levels of regulatory hormones (adiponectin, leptin, AFABP) and adipophilin in breast milk during 12 months of lactation.

Methods: Proteins were measured using high sensitive ELISA method in 72 healthy mothers within 2 days of beginning of lactation (day 0) and 1, 3, 6 and 12 months following delivery.

Results: Adiponectin levels in breast milk on day 0 (D0) were 22.8 ± 0.8 (mean \pm S.E.M.), in 1 month (M1) 22.0 ± 0.6 , in 3 months (M3) 20.5 ± 0.6 , in 6 months (M6) 21.4 ± 0.8 , and in 12 months (M12) 25.7 ± 1.4 ng/ml. AFABP levels were 12.3 ± 2.0 , 6.2 ± 1.3 , 1.3 ± 0.2 , 2.5 ± 1.0 and 4.6 ± 1.9 ng/ml, respectively. Leptin levels were 0.3 ± 0.04 , 0.2 ± 0.03 , 0.1 ± 0.01 , 0.1 ± 0.02 and 0.2 ± 0.04 ng/ml, respectively. Adipophilin levels in D0 were 1.98 ± 0.12 , in M1 2.83 ± 0.21 , in M3 2.39 ± 0.17 , in M6 2.57 ± 0.16 , and in M12 3.25 ± 0.21 μ g/ml. We found significantly higher levels of adiponectin in M12 in comparison to M3 and M6 ($p = 0.0026$), higher levels of AFABP in D0 and M1 when compared to M3, M6 and M12 ($p < 0.0001$) and higher levels of leptin in D0 than in M1, M3, M6 and M12 ($p < 0.0001$). AFABP levels correlated negatively with infants' body weight in M1 but there was no correlation throughout lactation between body weight and other proteins. We found positive correlation between adiponectin, AFABP and leptin throughout lactation. There was no correlation between adipophilin levels and other proteins.

Conclusions: All proteins were detectable in breast milk up to 12 months of lactation. There was a decreasing trend of the hormone levels until M3 and subsequent increase till M12.