

CIRCULATING LEVELS OF KLOTHO IN PREMATURE AND TERM BABIES: CORRELATIONS WITH GROWTH AND METABOLIC PARAMETERS

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Klotho, a transmembrane protein with anti-aging properties, regulates phosphate, calcium and bone metabolism, induces resistance against oxidative stress and may participate in insulin signalling. Neonates, especially preterm ones, are prone to metabolic disturbances and oxidative stress.

Objective: To evaluate circulating Klotho concentrations in preterm and full-term infants and unravel possible correlations with growth, metabolism and indices of oxidative stress.

Methods: Plasma Klotho levels were determined by specific ELISA in 50 healthy neonates (25 preterm, mean[SD] gestational age 33.7[1.1] weeks and 25 full-term infants) at days 14 and 28 of life. Associations of Klotho with anthropometric (body weight and length) and metabolic parameters (serum calcium, phosphate, 1,25-hydroxy-vitamin D, parathormone, glucose, insulin, homeostasis model assessment index of insulin resistance [HOMA-IR]), and indices of oxidative stress (MDA and superoxide dismutase concentrations) were examined.

Results: Plasma Klotho levels were significantly higher in full-term than preterm infants at both days 14 (1099[480] pg/mL vs. 884[239] pg/mL, respectively) and 28 (1277[444] pg/mL vs. 983[264] pg/mL, respectively). In both preterm and full-term infants, Klotho levels increased significantly from 14th to 28th day of life. Circulating Klotho concentrations in the entire population correlated with body weight ($r=0.34$, $p=0.001$), and length ($r=0.33$, $p=0.001$), as well as with 1,25-hydroxy- vitamin D ($r=0.24$, $p< 0.05$) and MDA levels ($r=0.20$, $p< 0.05$), but not with glucose, insulin, HOMA-IR or other variables.

Conclusions: Klotho levels rise as gestational and postnatal age advance in neonates. Besides an impact on vitamin D metabolism and oxidative stress, Klotho appears to have a role in infants' growth.