

**HUMAN BREAST MILK MELATONIN LEVELS ACCORDING TO LACTATION
STAGES AND GESTATIONAL AGE AND PRETERM NEONATE BLOOD
MELATONIN CONCENTRATION ACCORDING TO GESTATIONAL AGE**

(ProMote STUDY)

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Introduction-Aim: Melatonin is a potent bioactive molecule with a wide range of biological functions, especially in infants. Evidence shows that the peak human breast milk melatonin (HBMM) level is highest in colostrum. Studies indicate that HBMM concentrations after birth were significantly higher in mothers who delivered before 34 GW than in those who delivered after 34 GW. Meanwhile, given that HBMM concentration is likely derived from blood and levels of serum melatonin increase throughout pregnancy, it may hypothesized that HBMM levels also increase according to gestational age. The distribution of neonate plasma melatonin concentrations has been found to be correlated with gestational age. This study aims to investigate HBMM levels according to lactation stages and neonate plasma melatonin and HBMM concentration according to gestational age. **Method:** Mothers of preterm neonates collected 5-10ml of nighttime breastmilk between 01:00–05:00 a.m. at three time points: 3rd-5th day (colostrum), 10th-14th day (transitional milk) and 20th-28th day (mature milk). Preterm neonate blood samples were collected as follows in NICU: 1) at the admission of the neonate in the NICU, 2) between 4th-7th day of life, 3) between 10th-14th day, and 4) at 35-36 weeks gestational age (for premature neonates <33 weeks). **Results:** Samples from 53 preterm neonates (Gestational Age: 33.4 weeks, SD: 2.2), of which 52.8% were male, have been analyzed. Mean concentration of colostrum melatonin was significantly higher ($p=0.007$) in mother who delivered after the 34th week (24.22 pg/ml; SD 16.9) compared to those who delivered before 34th week (13.2 pg/ml; SD 11.3). No significant differences were observed in melatonin in other breast milk or infant blood samples. Colostrum melatonin was also positively correlated with gestational age ($p=0.025$). **Conclusion:** The results of this study may inform models to design tailored supplementation strategies of melatonin for the infant according to melatonin concentration in maternal milk.