

Chapter 49

Examination of PACAP During Lactation

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Abstract Breast milk is a complex biological fluid that contains nutritional components and non-nutritive bioactive factors promoting survival and healthy development of the newborn. PACAP has important functions, as a bioactive factor, in reproductive and developmental processes. Shortly after its discovery, PACAP and its receptors were identified in normal and cancerous mammary gland samples. The present review summarizes data obtained in breast milk during different periods of lactation by radioimmunoassay. Our group showed, for the first time, that PACAP is present in the human milk at levels 5- to 20-fold higher than in the respective plasma samples. PACAP-like immunoreactivity (LI) is higher in colostrum compared to transitional and mature human milk samples. PACAP level seems stable until the 10th month of lactation and there after, a significant increase can be observed between samples obtained in the interval 11th–17th months of breastfeeding. The presence of PACAP can also be confirmed in milk and plasma samples from the most commonly used ruminant domestic animals (cow, sheep and goat), pasteurized cow milk and infant formula samples. Similarly to the human results, the concentration of PACAP in the milk whey is almost ten times higher than in the plasma of the respective animals, while pasteurized cow milk and infant formula samples contain PACAP-LI levels comparable to human milk samples. The exact function of PACAP in the milk is not known at the moment. We hypothesize that PACAP (1) is essential for the growth and development of the

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