

The uniqueness of the components of human milk

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An article in the *New Scientist* in 2008 was titled "*Making formula milk more like mum's*". In reviewing the literature on the composition of breastmilk and its sigificance to the baby the theme of the article changed to "*Why breast beats formula*". My presentation will highlight some of the research findings that lead to this conclusion.

The article considered the impact of breastfeeding on the growth and development of important organs in the baby including the brain, mouth, throat and intestine, outside the gut, ear, thymus, and intestine. Differences in the nutrient composition of milk are tailored to complement the metabolic immaturity of each species young. Thus it was concluded that the composition of human milk is uniquely appropriate for the human baby at a time when many of baby's systems, such as, the digestive, hepatic, neural, renal, vascular, visual, skeletal and immune systems are functionally immature. Human milk augments the specific developmental defects of the baby and thereby facilitates optimal rates of growth and development during early postnatal life. The immune system presents a clear example of this relationship between mother's milk and neonatal development as the immune system of all mammalian species are consistently immature at birth largely due to the near sterile conditions of the uterus do not provide antigen stimulation for the development of specific (acquired) immunity. Colostrum and milk compensate for the immaturity of the newborn's immune system. The significance of breastmilk in relation to the development of the infants metabolic and immune systems will be discussed.

Objectives

1. Understand the complex composition of breastmilk.
2. Relate specific milk constituents to the infant's metabolic requirements.
3. Relate specific milk constituents to the infant's adaptation to the postnatal environment.

Further Reading

Hale and Hartmann's "Textbook of human lactation" 2007.