

An Insight into Enteral Nutrition for Preterm Infants

Aayushi Singh*

Department of Microbiology, Punjab University, Chandigarh, India

*Corresponding author: Aayushi Singh, M.Sc. Microbiology, Punjab University, Chandigarh, India,

E-mail: singhaayushi77@gmail.com

ABSTRACT

A preterm infant is a baby born before the completion of 37 weeks of gestation (more than 3 weeks before due date) in a pregnant woman. If the woman goes into labor before 37 weeks, is termed as preterm labor. The health conditions of the mother, such as heart disease, kidney damage, diabetes, may be responsible for a preterm birth. Many times, the cause of a premature birth is rather unknown. Some premature births are also caused due to multiple pregnancies, such as twins and triplets. The number of premature neonatal births are increasing significantly in the last few decades. This has majorly been achieved due to substantial changes brought about in enteral nutrition supply in preterm neonates. The purpose of feeding preterm neonates with enteral nutrition is to establish growth similar to fetal growth for a satisfactory functional development of the neonate. The preferred nutrition for preterm infants is fortified human milk from the infant's own mother; or, formula milk, particularly designed for preterm infants. However, mothers who deliver preterm are often not able to successfully breastfeed. Alternative nutrition supplements which are fed enterally need more attention for preterm infants to undergo proper mental and physical growth and development.

Keywords: Preterm infants, Nutrition, Gestation, Growth.

SHORT COMMUNICATION

Preterm infant enteral nutrition

One of the enteral nutrition methods include the feeding of fortified human milks, Formula milk and a newer approach is Prebiotics and Probiotics that confers health benefits in preterm infants. The use of human milk for preterm infant nutrition is a standard practice [1]. It is fortified with added nutrients that are necessary to meet the proper nutritional requirements. Parents and health care associates should be aware that human milk composition may vary for the duration of lactation, within the day of lactation, and even during the expression. Also, the treatment following expression i.e. storage and pasteurization that may influence the composition of the human milk [2]. If human milk is not available preterm formula milk may be used. Human milk consists of a number of biologically active components that contribute to short term and long term benefits of breastfeeding. Mainly the components are proteins such as, α -lactalbumin, lactoferrin, osteopontin, and fat globule membrane proteins [3]. Formula milk contains the modified proportions of all the components found in human milk. Formula milk components are procured from various sources (e.g. phospholipids/marine oils, more mildly heat-treated whey protein concentrates, calcium salts, etc.). Formula fed infants grow differently from breastfed infants, particularly gaining more body fat and weight after 3 months to 6 months of birth and are also known to contain higher concentrations of serum amino acids, insulin, and blood urea nitrogen than the breastfed infants. There is a considerable difference in nutritional status and gut microbiota [4]. These variations may lead to higher risks of obesity and type 1 and type 2 diabetes along with an increased risk of cardiovascular diseases in later life [5]. The main objective of any Formula milk provider is to make the composition similar to that of human milk. Changes in nutrient composition of formula milk require clinical trials in infants, which are costly and are time consuming and may take up to 4 years to 5 years to yield legitimate data. The addition of bioactive components requires not only for it to be safe for use but that they should also confer benefits to the infants. Furthermore, the sources from which the ingredients are taken are costly and require much time in processing to increase their quality. Another enteral nutrition supplement that can be used is prebiotics and probiotics. Human milk contains more than 130 different oligosaccharides that are fermented in part in the infant's colon [6]. Preterm neonates show little absorption of intact human milk oligosaccharides, but most resist digestion in the small intestine and undergo fermentation in the colon. In infant formula, primarily one type of oligosaccharide mixture (GosFos) has been abundantly

studied in term and preterm infants. GosFos are not oligosaccharides present in human milk, but they represent short-and long-chain moieties of oligosaccharides: GosFos is constituted of a mixture of 90% short-chain galacto-oligosaccharides and 10% long-chain fructooligosaccharides [6]. GosFos has shown an increment in fecal *bifidobacteria* counts, reduction in stool pH, reduction in stool viscosity, and acceleration of gastrointestinal transport [7]. It has been supposed that GosFos may accelerate feeding advancement, reduce the incidence of gastrointestinal complications such as necrotizing enterocolitis, improve immunological functions and reduce the chances of hospital-acquired infections in preterm infants. A recent study showed a significant decrease in necrotizing enterocolitis after the introduction of different strains and dosages of probiotics [8]. There is not much evidence of probiotics being used as enteral nutrition in preterm infants primarily because of risks that arise along with the use of bacterial strains. The questions that remain unanswered include the dose, duration, and type of probiotic agent to be administered (species, strain, single or combined, live or killed) used for supplementation as a nutrient in preterm infants [8].

CONCLUSION

There is not enough evidence that suggests the existence of just one good enteral nutrition supplement available or preterm infants. Although numerous efforts have been made to make nutrition-related outcomes of formula-fed infants more similar to those of breastfed infants but there has been limited progress with regard to bioactive components that can affect short- and long-term outcomes. More laborious efforts are needed to collect useful data that can bring out a normal growth pattern in preterm infants with a reduction in risk of obesity and various lifestyle diseases. More efforts are needed to find useful probiotic bacterial strains and their interaction with preterm nutrient supplementation and compatibility.

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