Relationship between early weaning and food allergies

Relação entre desmame precoce e alergias alimentares

Relación entre el destete precoz y las alergias alimentarias

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How to cite: Vicente KBF, Mezzari MER, Canever L, Silva MA, Fabris FM. Relationship between early weaning and food allergies. 2024; 13(1): 45-59. Doi: https://doi.org/10.36239/revisa.v13.n1.p45a59

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Received: 23/10/2023
Accepted: 28/12/2023

RESUMO

Objetivo: Analisar a relação entre o desmame precoce e o desenvolvimento de alergias alimentares por meio de uma revisão integrativa. **Método:** Revisão integrativa da literatura realizada através das bases de dados Pubmed, Mesh e Scielo. **Resultados:** Através da busca pelos descritores determinados, foram selecionados 25 estudos científicos que atenderam aos critérios de inclusão. Devido sua grande composição, o leite humano é responsável pela promoção do crescimento das bactérias com efeito bifidogênico, estando em quantidades superiores nos lactentes em AME. **Conclusão**: Apesar de alguns dos estudos não mostrarem resultados significativos em relação ao leite materno ser um fator protetor contra as alergias alimentares, nenhum deles deixou de incentivar o AM ou mostrar os seus benefícios já cientificamente comprovados.

Descritores: Leite materno; Alergias alimentares; Desmame; Amamentação.

ABSTRACT

Objective: To analyze the relationship between early weaning and the development of food allergies through an integrative review. **Method**: Integrative literature review performed through the Pubmed, Mesh and Scielo databases. **Results:** Through the search for the descriptors determined, 25 scientific studies that met the inclusion criteria were selected. Due to its large composition, human milk is responsible for promoting the growth of bacteria with bifidogenic effect, being in higher amounts in infants in EBF. **Conclusion**: Although some of the studies did not show significant results regarding breast milk being a protective factor against food allergies, none of them failed to encourage BF or show its scientifically proven benefits.

Descriptors: Breast Milk; Food allergies; Weaning; Breast Feeding.

RESUMEN

Objetivo: Analizar la relación entre el destete precoz y el desarrollo de alergias alimentarias a través de una revisión integradora. **Metodo:** Revisión integradora de la literatura realizada a través de las bases de datos Pubmed, Mesh y Scielo. **Resultados**: A través de la búsqueda de los descriptores determinados, se seleccionaron 25 estudios científicos que cumplieron con los criterios de inclusión. Debido a su gran composición, la leche humana es responsable de promover el crecimiento de bacterias con efecto bifidogénico, estando en mayores cantidades en bebés en LME. **Conclusión:** Aunque algunos de los estudios no mostraron resultados significativos con respecto a que la leche materna sea un factor protector contra las alergias alimentarias, ninguno de ellos falló en fomentar la BF o mostrar sus beneficios científicamente probados.

Descriptores: Leche materna; Alergias alimentarias; Destete; Lactancia.

Introduction

The first human contact with food begins through breast milk. In this sense, breastfeeding (BF) is considered a fundamental constituent for the promotion of the baby's health together with the benefits for the breastfeeding woman. It is well established that exclusive breastfeeding is a determining factor in the reduction of infant mortality and the occurrence of allergic processes, in addition to its influence on neurological and psychomotor development, among other associated benefits.[1]

The Ministry of Health (MH) points out that breast milk should be offered in the first moments after birth and follow exclusively until six months of life of the child, being recommended until two years of age or more in a complemented way.[2]

Thus, the first contact with food and nourishment offered to the newborn exclusively in the first 6 months of life should be breast milk, since in its composition, in addition to the essential nutrients, there are immunological, antimicrobial, anti-inflammatory and hormonal factors. In this way, it has the ability to stimulate the affective and psychological development and maintenance of the gastrointestinal tract.[3]

Above all, the rates of early interruption of breastfeeding and introduction of other foods before the indicated period are high and are increasingly rising, since the World Health Organization (WHO) sets a goal that at least 90% of children should be exclusively breastfed, but only 41% of infants receive breastfeeding in the ideal way in Brazil. In this sense, misinformation ends up resulting in the belief that breast milk by itself is not a complete and nutritious food.[2-4]

Human milk (LH) differs from other foods by numerous compounds, among them, LH has leptin, a hormone that regulates hunger and satiety, causing the baby to develop satiety control. In addition, colostrum has the bifid factor, modulating the colonization of the immature gastrointestinal tract of the baby with beneficial microorganisms.[5]

Considering that, the premature lapse can trigger numerous problems in childhood and later in adult life, since, in the first months of life, during the peak of breastfeeding, the immune and gastrointestinal systems are still immature and prone to the development of diseases that persist even in the other stages of life, it is evident that the incentive, Encouragement and dissemination of information on the subject to lactating and pregnant women is extremely essential.[6]

It is understood by weaning, the termination or interruption of breastfeeding, and should be a natural process, without being forced, occurring after two years of age, where the child is already receiving other foods and ends up reducing the number or losing interest in feedings.[2]

In this sense, the present study aims to analyze the relationship between early weaning and the development of food allergies (AAs) through a literature review.

Method

This project is an Integrative Bibliographic Review research, of a descriptive nature, with a search carried out through online material of national and international articles, monographs and dissertations published between the years 2010 and 2023.

The sample of this study was composed of scientific articles available on the study platforms Google Scholar, Pubmed, Mesh and Scielo, which relate to the delimited theme. Data were collected during the months of February to May 2023 and literature review articles were not considered as results.

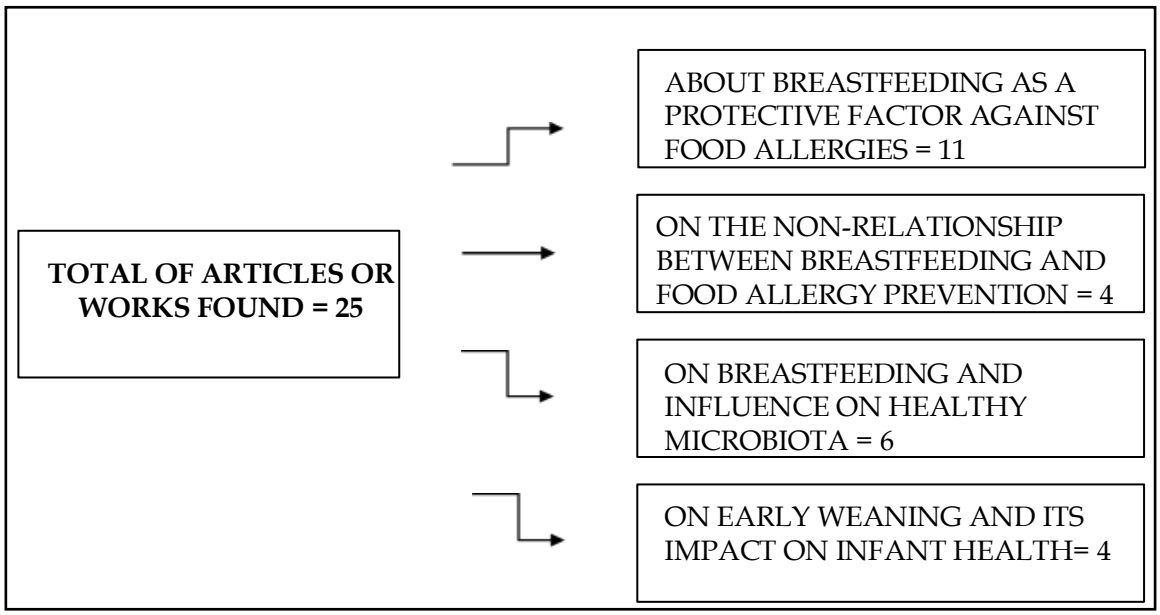

Figure 1-Outline of the articles found and their main ideas. 2023.

Results and Discussion

Chart 1 presents the list of articles and scientific studies that presented positive results in relation to breastfeeding being a protective factor against AAs, and those that showed the impact on the intestinal microbiota.

Chart 1- Studies correlating breastfeeding, microbiota and food allergies. 2010-2023.

Article title	Author/ Year	Sample	Objectives	Results	Conclusion
Breastfeeding in the prevention of overweight, childhood obesity and allergies	OLIVEIRA; FANARO, 2015	40 children from 1 to 7 years old enrolled in public and private schools	Compare the nutritional status and dietary practices of children who had different types of breastfeeding in order to	35% of the children not exclusively breastfed had various allergies, on the other hand, only 25% of the exclusively breastfed children had such diseases, demonstrating a	There is evidence of the relationship between exclusive breastfeeding up to the 6th month and the prevention of allergies and overweight.

			show a relationship with allergies, overweight and obesity	possible protective effect analyzing the category as a whole.	
Relationship between Early Weaning and Food Allergies in Children Enrolled in Two Philanthropic Institutions of Brasília - DF	CALZA, 2012	A total of 152 children aged 4 months to 5 years were evaluated.	To analyze the relationship between early weaning and the prevalence of food allergies and intolerances.	24% of the children had early weaning. 25% of the children had some type of food allergy and/or intolerance.	There is a relationship between the time of BF and the development of AA.
Risk Factors Influencing Tolerance and Clinical Features of Food Protein–induced Allergic Proctocolitis	BUYUKTIRYAKI *et al.*, 2020	257 infants hospitalized with rectal bleeding and diagnosis of allergic proctocolitis induced by food protein in 5 different allergy or gastroenterology outpatient clinics.	Identify the risk factors for the development of the disease and the allergenic foods that trigger it.	The main food that caused allergy was cow's milk (99.2%). 195 patients had allergies to a single food, and of these, 193 were to cow's milk..	There is evidence that cow's milk is an allergy-causing food in children and that the newborn's gastrointestinal system is too immature to receive such food.
Breastfeeding increases microbial community resilience	CARVALHO-RAMOS II *et al.*, 2017	Fecal samples from 11 infants monthly during the first year of life.	To analyze changes in microbial community structure in this group of infants during early life due to external factors.	Gradual increase of beneficial bacteria in the gut microbiota of breastfed infants, remaining in symbiosis even after weaning. Children who received non-breast milk or food earlier than recommended had changes in the microbial profile causing instability.	Results suggest a pattern of gut microbiota resilient to external forces due to the probiotic and prebiotic effects of SMA, reinforcing the importance of SMA until the sixth month of life.

Primary Prevention of Cow's Milk Sensitization and Food Allergy by Avoiding Supplementation With Cow's Milk Formula at Birth A Randomized Clinical Trial	URASHIMA *et al.*, 2019	312 RN from a university hospital in Japan.	Determine whether avoiding supplementation with cow's milk formulas at birth may decrease the risks of sensitization to cow's milk protein and/or AA.	The immediate type of AA occurred in 22 of 151 infants (14.6%) in the LF/EF group (breast milk + hydrolyzed formula), which was significantly lower than 45 of 151 infants (29.8%) in the LF+CMF group (breast milk + cow's milk formula).	Not only sensitization to cow's milk, but also clinical AAs are preventable mainly by avoiding the supplementation of cow's milk-based formulas in the NB.
Early development of infant gut microbiota in relation to breastfeeding and human milk oligosaccharides	CHICHLOWSK *et al.*, 2023	A total of 94 mother-baby pairs	To investigate associations between infant gut microbiome development, infant age, duration of breastfeeding, and human milk oligosaccharide composition (HMOs) in breast milk.	The relative abundance of B. bifidum bacteria in the feces of infants who were breastfed for more than 6 months was significantly higher compared to the infant breastfed up to 3 months (p=0.0285).	The duration of EBF in the first months of life affects the composition of the infant gut microbiota, providing evidence of how LH affects the development of the infant microbiome.
Association Between Breast Milk Bacterial Communities and Establishment and Development of the Infant Gut Microbiome	PANNARAJ *et al.*, 2017	Infant stool samples from 107 healthy pairs of mothers and babies.	To determine the association between breast milk and areolar skin and the bacterial communities of the infant intestine.	Bacterial diversity and changes in composition were associated with the proportion of daily intake of breast milk in a dose-dependent manner, even after the introduction of solid foods.	Bacteria in breast milk seed the baby's gut, underscoring the importance of breastfeeding in the development of the baby's gut microbiome.
Attenuation of food allergy symptoms following treatment with human milk oligosaccharides in a mouse model	CASTILLO-COURTADE *et al.*, 2015	Mice sensitized with ovoalbumin.	To evaluate the effect of two HMOs, 2'-fucosilactose and 6'-sialilactose, on symptomatology and immune responses in an AA model in ovalbumin-	Daily oral treatment with HMOs attenuated symptoms of AA, including diarrhea and hypothermia. Both HMO, 20-fucosilactose and 60-sialilactose, reduced the passive cutaneous anaphylaxis	Thus, HMOs may have therapeutic potential in allergic disease.

			sensitized mice.	response, but only 60-sialilactose directly inhibited mast cell degranulation in vitro at high concentrations.	
Randomized Trial of Introduction of Allergenic Foods in Breast-Fed Infants	PERKIN, et al., 2016	1,303 3-month-old infants in EBF.	Early introduction into one of the groups of 6 types of allergenic foods between 3-6 months of age, and associate with another group without food introduction and following with SMA. Evaluate the development of AA.	The prevalence of any AA was significantly lower in the early introduction group than in the introduction group at the recommended time (2.4% vs. 7.3%), highlighting egg allergy (1.4% vs 5.5%) and peanut allergy (0% vs 2.5%). Despite these results, the clinical trial showed no efficacy relating the early introduction of food with the prevention of AAs.	The early introduction of allergenic foods does not prevent a further development of AA.
Dynamics and Stabilization of the Human Gut Microbiome during the First Year of Life	BACKHED *et al.*, 2015	98 complete samples of babies/mothers were obtained. The babies (44 boys/54 girls) were the result of healthy pregnancies planned for vaginal delivery.	Characterize the gut microbiome during the first year of life and evaluate the impact of the mode of delivery and feeding on its establishment, understand the interaction between the gut microbiome and the human body early in life.	Stopping breastfeeding had profound effects on the microbiota in 12-month-old infants and changed microbial ecology to a composition similar to that of adults. Consistently, the "microbiota age" of these breastfed 12-month-old children appeared younger than that of babies who were no longer breastfed.	Results highlight the role of breastfeeding in the formation and succession of gut microbial communities during the first year of life.
Differences in exosome populations in human breast milk in relation to	PAREDES*et al.*, 2014	Breast milk collected from 22 mothers on day 3-8 postpartum	To characterize the exosomes of early and mature HL breast milk and to investigate	A higher exosome content was found in early milk compared to mature milk. Notably, mothers	The phenotype of exosomes in breast milk varies with maternal sensitization and lifestyle, which can

allergic sensitization and lifestyle		and from 61 mothers at 2 months postpartum .	whether allergic sensitization and an anthroposophic lifestyle could influence the exosome profile.	whose children developed sensitization had an increased amount of HLA-ABC in their CD63-enriched milk exosomes.	influence the development of allergy in the child.
Association Between Breast Milk Microbiota and Food Allergy in Infants	WANG *et al.*, 2022	135 healthy pregnant women and their term newborns from a hospital in Beijing, China.	To investigate the relationship between breast milk microorganisms and infant AA through breast milk samples and feces from exclusively breastfed infants.	The incidence of AA was lower in infants in EBF than in infants not exclusively breastfed, but there was no statistically significant difference.	Breast milk contains several microorganisms that have protective effects against AA, both by influencing the colonization of the gut microbiota and by producing butyrate.
Relationship between exclusive breastfeeding and primary prevention of adverse food reactions in children	SANTOS; BARBOSA, 2010	48 children, from 2 to 6 years of age, of both sexes, from a municipal school in the city of Ivatuba - Paraná.	To investigate the relationship between EBF and the primary prevention of food reactions.	The abundance and uniformity of the milk microbiota and the number of differential bacteria were higher in the breast milk samples of the non-allergic group.	There is a protective relationship between AM and AA.
Retrospective observational cohort study regarding the effect of breastfeeding on challenge-proven food allergy	GINKEL *et al.*, 2018	649 children underwent a double-blind placebo-controlled feeding challenge (DBPCFC) as part of routine care at a tertiary clinic.	To assess whether breastfeeding has a protective effect on AA.	In breastfed children, each additional month of breastfeeding reduces the risk of AA by approximately 4%.	These results show for the first time that in children investigated for possible AA, each additional month of breastfeeding is associated with a lower risk of developing clinical AA diagnosed by DBPCFC.

Feeding practices and factors associated with the early introduction of complementary feeding among children under six months of age in the northwestern region of Goiânia	SCHINCAGLIA *et al.*, 2015	362 NBs of both sexes.	To analyze feeding practices and factors associated with the early introduction of complementary feeding among children under six months of age born in the maternity hospital in the northwestern region of Goiânia-GO, Brazil.	95.3% children received early water (77.5%), fruits (62.7%), juices (57.2%) and salt food (55.1%); after adjusted analysis, a higher prevalence of the outcome of early food introduction was found in children of smoking mothers (PR=1.02; CI95% 1.01;1.04), while this prevalence was lower in primiparous women (PR=0.97; CI95% 0.95;0.99).	The early introduction of complementary feeding negatively influenced the duration of EBF, much shorter than that recommended by the WHO and MS.
Breastfeeding modulates neonatal innate immune responses: a prospective birth cohort study	BELDERBOS *et al.*, 2011	A birth cohort study conducted in 291 healthy full-term newborns.	To evidence the environmental determinants of the neonatal immune system	Breastfeeding was the main determinant of neonatal innate immunity, associated with 5 (31%) of the neonatal innate immune parameters, of which the association with TLR7-mediated IL-10 production was more significant in breastfed neonates.	The protective effect of breastfeeding against subsequent infections and atopy can be explained by its innate immune modulating effects in the first month of life.
Breastfeeding: a key modulator of gut microbiota characteristics in late infancy	MATSUYAMA *et al.*, 2018	Stool samples from 52 healthy 1-year-old Australian children.	To investigate the impact of the most commonly cited factors that may have influenced the gut microbiota profiles of one-year-old infants: mode of delivery, duration of breastfeeding, and exposure to antibiotics.	The feeding patterns of children who were breastfed along with solid foods had significantly better microbiota profiles compared to children who received breast milk and powdered milk along with solid foods	This study provided evidence that breastfeeding continues to influence the gut microbial community even in late childhood, when these children also consume varied foods.

Infant gut immunity: a preliminary study of IgA associations with breastfeeding	BRIDGMAN *et al*., 2016	Subsample of 47 babies (36 to 46 weeks gestation)	To examine the association between breastfeeding and infant fecal IgA concentration in early life.	IgA levels increased successively in children with exclusive breastfeeding. In the absence of breastfeeding, female sex and exposure to pets raised fecal IgA to levels found in breastfed infants.	Breastfeeding is associated with successive increases in infant fecal IgA. The potential impact of breastfeeding on the development of infant mucosal immunity may therefore be important in later infant health.
Prevalence and determinants of exclusive breastfeeding (EBF) and use of infant formulas in children aged 0 to 6 months in the municipality of Itapejara D'Oeste-PR	GNOATTO; BARATTO, 2018	Mothers of children under 6 months of age, totaling a sample of 50 participants in the municipality of Itapejara D'Oeste-PR.	To verify the prevalence of exclusive breastfeeding and its determinants, as well as the use of infant formulas in the first six months of life.	In children aged 0-6 months, EBF was 44% (n=22); About 56% (n=28) of the children received foods sweetened with sugar. 40% was identified	There is a low prevalence of EBF in this region. It is expected that guidance and awareness of health agencies reinforce the importance of EBF for the mother-child binomial.
Risks related to interruption of exclusive breastfeeding and early feeding introduction	CENTURION; ARCANJO; FERNANDES, 2020	150 mothers, 131 from a private institution and 19 from a community institution in two universities in Foz do Iguaçu - PR	To evaluate the knowledge of university mothers in two universities in the city of Foz do Iguaçu-PR.	Regarding the early food introduction, 26 mothers believed that new foods could be offered before the indicated time, while 124 mothers waited for the baby to complete 6 months.	The results confirm the hypothesis that mothers with a higher level of education have greater knowledge on the subject.
"Breast is best": The evidence	KRAMER, 2010	16,491 babies followed up to 12 months of age.	Clarify theories that accelerated neurocognitive development has been linked to breastfeeding	It strongly suggests a causal relationship between faster brain development and prolonged and exclusive breastfeeding.	Prolonged and exclusive breastfeeding reduces the risk of gastrointestinal infection and atopic eczema during childhood, as well as positively influencing greater neurocognitive development.

When analyzing the studies in detail, it was observed that several point to breast milk as a protective factor not only against AAs, but against any type of allergy, such as respiratory and skin.

The risk of developing an AA is 65% higher in children weaned before 6 months. With this, the study by Oliveira and Fanaro showed positive results to prove the theory, where 35% of children with various allergies were not exclusively breastfed, while only 25% of those breastfed had some allergic reaction.[5]

The duration of BF is also an important factor, since even when supplemented with water and teas, but for a longer duration of time, it was shown to be protective against the development of allergies.[5]

In a sample collected from 48 children, from 2 to 6 years of age, 100% of the children in EBF up to the 6th month of life, following the recommendations of the WHO (1995), did not present any allergic reaction. However, of the children who did not receive breast milk, 11.4% had AA.[7]

Just as most studies bring the importance of breast milk for the modulation of the immune system of the child's body, Carvalho-Ramos and authors point out that LH is a source of symbiotic bacteria, has oligosaccharides that are not digested naturally by the gastrointestinal tract and therefore do the function of increasing the population of beneficial bacteria in the microbiota of neonates, being predominantly dominated by bifidobacteria and lactobacilli.[8]

It was seen that the intestinal microbiota of children exclusively breastfed until the 6th month remained prominent and in symbiosis even after weaning and introduction of solid foods, in addition to the gradual increase of their microorganisms. This fact was not observed in weaned children before the 5th month, and changes in the microbial profile of children who received non-breast milk or food earlier than recommended were shown.[8]

In Maia's research, referring to the relationship of breastfeeding in children with CMPA, the data did not have a significant variation, however, more than half of the children with CMPA (58.6%) had their breastfeeding interrupted before 3 months of age and, of those children who did not develop the allergy, 56% of the children remained in EBF above 4 months.[9]

According to the author, the data show the importance of maintaining exclusive breastfeeding until 6 months and the hypersensitivity to cow's milk caused by the immaturity of the intestinal mucosa barrier of neonates.[9]

One of the main factors influencing the development of AA is the colonization of the gut microbiota. Given this, the precedents that impact on the profile of the microbiota of babies are the mode of delivery, the duration of breastfeeding and the exposure to antibiotics, focusing on the duration of BF, which had a significant influence compared to the other two factors.[10]

Breastfed and non-breastfed children have different microbiota profiles explained by HMOs. These non-digestible carbohydrates undergo fermentation and form SCFAs such as butyrate, lactate, acetate and succinate, contributing to the predominance of beneficial bacteria in the infant's gut.[10]

Large amounts of lactate are produced from the oligosaccharides present in breast milk. A bacterium called Veillonella spp., present in breast milk and, consequently, which is also in greater quantity in breastfed children, uses lactate as a substrate, preventing the accumulation of lactate by transforming it into

other SCFAs such as acetate and propionate. Children fed infant formula have a lower response to satiety, which is partially explained by the different types of SCFA produced by the intestinal microbiota of breastfed infants, since children who were not breastfed had higher production of butyrate alone.[10]

Among the studies analyzed, 11 studies had positive results regarding breast milk being a protective factor against AA and, on the other hand, 4 presented negative results (Chart 2). Even the studies that have shown negative results regarding the protection of breast milk against AAs, emphasize the importance of following breastfeeding according to the recommendations of the health organs for its numerous nutritional components, antibodies, hormones and antioxidants, which will bring benefits and a good development of the systems of the human organism.[5]

Chart 2 - Presentation of studies that did not show a protective relationship between breast milk and food allergies and their possible limitations. 2023.

Article	Limitations
Evaluation of the relationship between breastfeeding and the development of food allergies (SOUSA; ELIZEU; SALOMON, 2021)	Small number of the sample of cases; the online nature of the research that did not allow the clarification of doubts regarding the completion of the questionnaires, allowing a free interpretation of the questions.
Breastfeeding in children with and without CMPA (MAIA, 2019)	58.6% of children with CMPA breastfed from 0-3 months. It is possible that if these children had been breastfed until they were 6 months or older, they might not have developed CMPA.
Association between nutritional status and allergies present in children who had different types of breastfeeding in the first six months of life. (NUNES; RIQUETE, 2020)	The sample size is small and most children stopped being breastfed before the sixth month of life.
Formula and breast feeding in infant food allergy: A population-based study (GOLDSMITH *et al., 2015)*	Study did not investigate AA using the gold standard Oral Food Challenge (OFC), and was limited to high-allergy risk cohorts, providing limited evidence.

Considering the above findings that did not demonstrate significant results between the benefit of breastfeeding and the protection in the development of AAs, it can be observed in the research of Sousa et al that, although there are no direct relationships, the existence of studies evidencing the importance of BF as a prevention factor not only for AAs and other allergies is highlighted, but also, in the impact of the modulation of the intestinal microbiota, which is a determining agent for the development of these.[11]

Although the research of Goldsmith et al determines that the duration of EBF is not directly associated with AA in 1-year-old children, in the study itself, there is the presence of observations exposing that the associations between

breastfeeding practices and the development of allergic diseases change during childhood, and may have a protective effect in middle childhood and adulthood.[12]

In the statements of Nunes and Riquette, it is important to evidence that studies analyzed within the research show that the reduction of BF time associated with the intake of solid foods early before the indicated, may increase the possibility of developing allergy. Thus, it was found that children who obtained the introduction of some food before 6 months of life usually get sick frequently. On the other hand, none of the children in EBF in the indicated time and with the introduction of food in the recommended period showed a predisposition in this item.[13]

Despite the controversies, most of the existing studies on the subject suggest that BF is directly related to the decreased chance of developing allergic diseases, such as asthma and dermatitis in children under 5 years of age, in addition to AAs, particularly CMPA. Thus, LH is a practical source, free from the risk of microbiological contamination and rich in immunological and nutritional factors that will protect the child for much of his childhood.

The maturation of the immune system, the development of the gut microbiota and the provision of protection against allergies can be aided by the factors existing in breast milk that implicate in the intestinal immune development of the baby. This determination is caused by the maternal production of antibodies specially developed to protect the newborn against the pathogenic microorganisms around him. Every time the breastfeeding woman breastfeeds, there is the production of new antibodies due to the exchange of microbiota from the saliva of the infant to the mother during breastfeeding, indicating to the immune system to start the production of antigens for the transfer of antibodies to the baby in the other feedings. In this sense, it is emphasized that the superiority of breast milk in relation to other milks of other species and infant formulas is scientifically proven, evidencing that because of its components, it is able to supply the nutritional demands of children in isolation in the first six months of life and remains an important source of nutrients when supplemented until two years of age.[9]

Consequently, there is strong evidence that colostrum along with LH are responsible for providing a favorable microenvironment for intestinal maturation in the first days of life, which can play a protective role, preventing allergies, in addition to a complex of immunity elements necessary for the development and vital growth of the NB.[14]

Thus, the exposure of the newborn to pathogens that can cause allergic reactions is consistent with the emergence of allergies in babies who did not obtain EBF, reinforcing that the immaturity of the immune system of neonates is related to allergic sensitivity. In this sense, with artificial breastfeeding, the child will carry only their own antibodies, present at low levels in the first months of life, which causes greater vulnerability to infectious agents and an immature immune system, different from BF, where the baby receives antibodies from the mother for greater protection and microbiological development.[14]

Conclusion

LH is a source of nutrition of high value and complexity and showed its superiority in this study. It was evidenced to be a complete food and adequate to the levels of maturity of the infant's body systems, with excellent digestibility, has all the necessary nutrients and in the correct amounts for the proper functioning of the metabolism of the neonate, besides being always available, at an adequate temperature, in a practical and safe way.

It is noteworthy that the maturation process of the intestinal microbiota occurs in the first thousand days and, as seen in the studies, the intestinal microbiota of infants in EBF is distinguished from babies fed with infant formulas. Due to its large composition, LH is responsible for promoting the growth of bacteria with bifidogenic effect, being in higher amounts in infants in EBF, causing a more developed intestinal microbiota and with a greater number of protective agents.

Acknowledgement

This study was funded by the authors themselves.

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