



ORIGINAL ARTICLE

## Expert consensus on the nutritional aspects of initial and follow-on infant formulas<sup>☆</sup>



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### KEYWORDS

Delphi method;  
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### Abstract

**Introduction:** Infant feeding in the first months/years of life affects the health in the short and long term. Breast milk is the perfect food due to its many benefits. However, when breastfeeding is not possible, infant formulas are the best alternative. The aim of this study is to define the role of supplemented formulas in infant nutrition using the opinion of a panel of experts in infant gastroenterology and nutrition.

**Material and methods:** A survey, consisting of 62 items divided into 5 blocks, was completed by 48 panelists using the Delphi method to achieve a professional criteria consensus on nutritional aspects of infant formulas.

**Results:** Consensus was reached on 64.6% of the items, although opinions were divided on the nutritional aspects of infant formulas, and their influence on body and brain development and immune maturity.

**Conclusions:** The experts polled reached consensus on the suitable composition of lipids, lactose, calcium, vitamin D, and prebiotics in infant formulas, for a correct cerebral, immune and somatic development. There was no consensus on ill-defined topics, such as nutritional quality of proteins, use of thickeners, taurine supplementation, probiotic, and symbiotic aspects. More studies are necessary to confirm these issues.

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**PALABRAS CLAVE**

Método Delphi;  
Fórmulas infantiles;  
Suplementos;  
Consenso

**Consenso experto sobre los aspectos nutricionales de las leches infantiles de inicio y continuación****Resumen**

**Introducción:** La alimentación infantil en los primeros meses/años de vida condiciona la salud a corto y largo plazo. La lactancia materna es la alimentación ideal por sus innumerables beneficios. Sin embargo, cuando no es posible la alimentación con leche materna, las fórmulas infantiles constituyen la mejor alternativa. El objetivo del estudio fue definir el papel de las fórmulas de inicio y continuación para lactantes mediante la opinión de un panel de expertos en gastroenterología y nutrición infantil.

**Material y métodos:** Encuesta realizada mediante el método Delphi por 48 especialistas en pediatría y nutrición infantil. El cuestionario constaba de 62 ítems, estratificados en 5 bloques, sobre aspectos nutricionales de las fórmulas infantiles.

**Resultados:** Se consensó el 64,6% de los ítems, estableciéndose un acuerdo no unificado respecto a aspectos nutricionales y su impacto sobre el desarrollo corporal, cerebral y la maduración inmune.

**Conclusiones:** Según los expertos encuestados, existe consenso sobre la adecuada composición en lípidos, lactosa, calcio, vitamina D y prebióticos, de las fórmulas infantiles, para el correcto desarrollo cerebral, inmunitario y somático. No hubo consenso en aspectos aún no bien definidos, como la calidad nutricional de las proteínas, la utilización de espesantes y la suplementación con taurina, probióticos y simbióticos. Son necesarios más estudios que determinen estos aspectos.

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**Introduction**

Child feeding in the first months/years of life conditions to a great extent the child's health in the short and long term.<sup>1</sup> The World Health Organisation recommends exclusively breastfeeding for the first 6 months of life, afterwards supplemented with proper feeding until at least 2 years of age.<sup>2</sup> Breastfeeding is ideal due to innumerable benefits: it provides protection against infections, promotes neurodevelopment and reduces blood pressure/cholesterol and later risk of suffering from diabetes/obesity.<sup>1</sup> However, there are circumstances under which it is necessary to supplement or replace breastfeeding.

During the first years of life, a high percentage of children are fed with infant formulas. The *United States Food and Drug Administration* estimates that 40, 50 and >75% of babies receive infant formulas at 3, 6 and 12 months, respectively.<sup>3</sup>

To get as close as possible to breast milk, in the last decade infant formulas have been supplemented with functional ingredients: polyunsaturated fatty acids, beta-palmitate, nucleotides, prebiotics, probiotics, symbiotic, carnitine, taurine, etc., thus turning these formulas into "functional foods."

Various studies have attempted to determine the clinical relevance and safety of supplements. Most have been funded by child nutrition companies, and include few subjects with a short follow-up or somewhat inconsistent methodology.<sup>4</sup> Therefore, aside from their nutritional effects, the beneficial effects of infant formulas on allergies, lactose intolerance, respiratory/digestive infections, infant colic,

hypercholesterolaemia, etc., are still unclear. In the case of supplementation with prebiotics and/or probiotics, the Nutrition Committee of the *European Society for Paediatric Gastroenterology, Hepatology and Nutrition* considers it necessary to carry out more studies to define the optimal amounts, recommended duration, potential long-term risks/benefits, the use in special populations, etc.<sup>4,5</sup>

Due to these uncertainties, and the widespread use of these formulas, it is important to clarify some aspects relating to their quality, safety and benefits (short/long term). The purpose of this study is to ascertain the opinion of child gastroenterology and nutrition experts on certain controversial aspects of infant formulas, especially in areas with insufficient scientific studies. The degree of consensus will allow us to identify whether a uniform criterion for action exists, and detect areas for improvement.

**Material and methods**

A modified, two-round Delphi method was used in this study, consisting of a structured professional consensus technique, which has all the advantages of the original technique,<sup>6</sup> but none of its main disadvantages.

The project consisted of 4 phases: (1) creation of a *scientific committee* ( $n = 5$ ) to steer the project; (2) selection of a *panel of experts* (48 paediatricians) in child nutrition and gastroenterology; (3) preparation and sending an electronic survey in 2 rounds; and (4) analysis and assessment of results and preparation of conclusions.

A technical team directed and supervised the process and carried out the instrumental implementation.

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