BETWEEN PARENTS' EXPECTATIONS AND TODDLER'S NUTRITIONAL NEEDS, HOW CAN PROPER NUTRITION FOR YOUNG CHILDREN BE BEST PROVIDED?

LACTALIS ingredients

INTRODUCTION

At difficult times like these, we all become increasingly aware of the delicate balance of life. Preserving health and providing for basic needs become once more our main and daily preoccupation. Curing, feeding, supporting, helping through safety, solidarity, hygiene measures and discipline are strangely the only words that lead us on, day by day.

In these circumstances, children deserve the best we can offer. Feeding them with the proper and appropriate food to guarantee continued healthy growth and strengthen their body's defense against every potential risk is part of the parent's role. The period from birth to 3 years of age, characterized by intense physical and neurocognitive development, is also a key moment for the progressive transition from an infant to an adult diet with three meals a day rather than smaller meals throughout the day. We also know now that the environment, including diet, in the first thousand days from conception until 2 years of age affects long-term health, especially in terms of the risk of developing metabolic diseases in adulthood. This period of toddlerhood also marks the establishment of lifelong food habits. During this time, toddlers develop the motor skills for eating, but also food preferences that will affect their food selection for the rest of their lives. Parents often worry about their children not eating enough, but the most common discrepancies are actually the use of non-specific foods and the premature adoption of an adult diet. Always with the wish to provide proper nutrition for their child, parents are increasingly educating themselves with regard to which products would best benefit their child, and often look for ingredients that deliver particular health benefits.

Focus on infant formula market size

Global demand for Infant formula is expected to remain steady, as babies will always eat. In 2019, the IF market was estimated at 1.72 million Tons with growth forecasted to reach 1.91 million Tons over 5 years. Within this market, growing up milks register the highest expected growth rate. Accounting for more than 50% of the global IF market, growing up milk is a very dynamic segment, with numerous possibilities for innovation. Even for children above 1 year, formula producers continue to try to bridge the gap between breast milk and formula.

PARENTS' EXPECTATIONS DRIVE MARKETING TRENDS

Parents are concerned about the balanced growth of their young children and want the best nutrition for them. They have particular expectations regarding specifically developed products such as toddler milk or complementary foods, and this includes quality and convenience. Growing health concerns about the overall development of the baby is a key factor in the growth of the market.

The organic trend is a fundamental one. The organic label is recognized by all, and represents an additional reassurance for some parents. Moreover, the organic segment continues to gain market share in a market that is growing slightly. When it comes to maintaining parental confidence organic remains king, but other trends are emerging, such as "free from", “plant-based” or “clean” labels. The Clean label trend is based on several principles, including the reduction of additives in favor of natural ingredients, the simplification of recipes and greater transparency. A classic argument in infant nutrition, the development of taste and textures remains one of the main creative drivers, through original recipes with, for example, new flavors that have been rarely used until now or recipes adapted to the season. As for the introduction of new textures, while recommendations have evolved recently by emphasizing the importance of not mixing them, this practice is still a classic found in the category of foods for children from 6 to 24 months. More and more parents are practicing the child-led diversification method which recommends introducing solid foods (soft and melting) as soon as the young child can hold them. Some brands already offer such products (melting vegetable sticks that the child can hold to eat). As this area is still relatively unexplored, there are still many formulation opportunities for companies in the sector.

PARENTS' EXPECTATION DRIVES MARKETING TRENDS

Moreover, in terms of purchasing factors, convenience is always key, as with nomadic formats, such as ready-to-use milk or yoghurt and fruit puree in pouches.

Finally, in addition to the main trends, parent expectations may differ from country to country: the overall focus of their concerns differs, therefore communication and formulation strategies could be adapted to suit. For example, Chinese parents seek a wide range of functional ingredients in infant formula and in a survey expressed concern that their child's height or weight was lagging. Whereas parents elsewhere are more focused on overnutrition and want to support healthy eating habits in their child from a young age. Obesity and overweight in infants may put focus on calories in baby food, and in particular on sugar in growing up milk.

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WHAT ARE THE LATEST NUTRITIONAL RECOMMENDATIONS FOR TODDLERS?

TThe growth of children is high during the first months of life and slows down through the second year as they acquire more motor and cognitive functions, which may explain why their energy and nutrient needs differ from the earlier stage of infancy. Because it is a period of transition, there is a greater risk of inadequate nutrient supply in the second year compared with the age of full breast/bottle feeding or older ages. Nutritional guidelines for healthy children from 1 to 3 years are quite similar from both the European Food Safety Authority and the World Health Organization. Basically, the macronutrient need is different from that of adults when it comes to lipids, as shown in the table below:

	Proteins *(g / Kg BW* / day)*	*Lipids* *(total energy intake)*	*Carbohydrates* *(total energy intake)*
Toddlers	0.9-1 g	35-40%	45-55%
Adults	0.8 g	20-30%	45-55%

**BW: Body weight*

Lipid intake represents a larger part of the total energy intake (TEI) in toddlers than in adults. In most developed countries, nutrition surveys have shown that lipid intake is below the recommendations, with an intake of around 30% of TEI in USA (Sharma, 2013), France (Chouraqui, 2019b) and Hong Kong (Leung, 2013). More importantly, reducing the total intake of lipids automatically leads to a reduction in intake of essential fatty acid Omega 3 and Omega 6. These lipids are among the most crucial molecules that determine the integrity of the brain. Brain development continues until 3 years of age, so the intake of essential fatty acids is even more important during toddlerhood. As for total lipids, the intake of essential fatty acids is below the recommendation in many countries (Sharma, 2013; Chouraqui, 2019b; Leung, 2013). This trend can partly be explained by the decrease in consumption of baby foods or infant formula formulated with adequate fatty acid levels.

WHAT ARE THE LATEST NUTRITIONAL RECOMMENDATIONS FOR TODDLERS?

When we look at protein intake, the need is quite similar for adults and toddlers (0.8 and 0.9 g/kg body weight/day, respectively). However, the body weight of a 70 kg adult is very different from that of a 14 kg toddler, thus the quantity of proteins will also be totally different: 13 g for a toddler versus 70 g per day for an adult. In most developed countries, the intake of protein is much higher than recommended (Sharma, 2013; Chouraqui, 2019b). Many studies have shown an association between high-protein intake in early childhood and both body mass index and the potential risk for obesity later in life (Rolland-Cachera, 2016). However, the causal relationship between excessive protein intake and a subsequent risk of excessive weight is far from being established.

Finally, carbohydrate intake in proportion to total energy intake is similar between adults and toddlers, with the same warning: limiting the proportion of free sugar in the diet (EFSA NDA, 2014).

Global vitamin and mineral deficiencies continue to be a concern in toddlers, especially with vitamin A, folate, iron, iodine, and zinc (Lippman, 2013). Other micronutrients are also essential to respond to the specific needs in toddlers, such as calcium, vitamin D and phosphorus, which contribute to bone health through the formation of bone mass capital.

These deficiencies and specific needs could be addressed by various approaches, including dietary counseling, supplements and fortified foods, and specific formulas, including follow-on formula and young child formula.

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DO YOUNG CHILD FORMULAS PROVIDE A NUTRITIONAL ADVANTAGE?

Toddler milk, growing up milk, and Young Child Formula (YCF) are synonyms referring to milk-based drinks intended to partially satisfy the nutritional requirements of young children aged 1 to 3 years. Currently, there is no regulation or official guideline indicating the ideal composition of such formulas. Not all pediatric nutrition societies recommend the replacement of cow's milk by YCF in children: this point is still under debate among scientific experts.

There is limited research on the contribution of milk to the diets of children under three years old, more specifically, on whether YCF provides a nutritional advantage compared to standard cow's milk. Three clinical trials from 2010 to the present day have investigated the nutritional benefits of YCF consumption in terms of nutritional adequacy as per official guidelines in three different countries: Australia/New Zealand, France and Ireland. In all studies, the YCF were fortified with vitamins and minerals. It was found that the consumption of YCF leads to a reduced protein intake, closer to the amount recommended (Lovell, 2019; Chouraqui, 2019; Walton, 2013) but also increased essential fatty acid (Chouraqui, 2019) and less saturated fat intakes (Walton, 2013). The supplementation of YCF with vitamins and minerals, in particular Vitamin D and iron, brings dietary intake levels into line with most of the nutritional recommendations (Lovell, 2019; Chouraqui, 2019; Walton, 2013).

Thus, YCF consumption may help to overcome the most frequent nutritional inadequacies observed in several countries, especially as regards iron and essential fatty acids.

FOCUS ON
VEGETARIAN AND PICKY EATERS

It is common for toddlers to skip meals, refuse to eat certain foods and even eat only one type of food for days at a time. Picky/fussy eaters are usually defined as children who consume an inadequate variety of foods through rejection of a substantial amount of foods that are familiar as well as unfamiliar to them. Picky eating is often associated with reduced food intake resulting in macro and micronutrient inadequacy (Samuel, 2018). Whether the child's own or the family's choice, a vegetarian diet that is well-balanced can provide for the needs of children and adolescents.

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However, appropriate caloric intake needs to be ensured, and growth monitored. Particular attention should be paid to adequate protein intake and sources of essential fatty acids, iron, zinc, calcium, and vitamins B12 and D (Amit, 2013).

For these two populations, the consumption of YCF may provide a good opportunity to meet nutritional recommendations.

KEY INGREDIENTS OFFERED BY LACTALIS INGREDIENTS

Proteins and Prolacta®

In industrialized countries, protein consumption is above the dietary guidelines for toddlers and children. According to ESPGHAN, the European Society of Pediatrics Gastroenterology, Hepatology and Nutrition, the protein level in YCF should not exceed 1.6 g / 100 Kcal of intact animal protein (Hojsak, 2018).

This figure assumes that the protein source comes from high quality protein, which means a protein with a high concentration of essential amino acids that is also easily digestible. Protein quality is important at all stages of life, not least toddlerhood. During growth, the body must make new proteins, and for that it needs to have all the essential amino acids to build an entire protein. With one amino acid missing, the protein cannot be constructed. On the other hand, if more amino acids are ingested than needed, the body cannot use them all and the excess amino acids are lost in oxidation. This waste of amino acids involves the body's detoxification process and can induce deleterious consequences in the long term. This is even more important in the case of particular diets such as vegetarianism or that of picky eater children, where protein intake may fall below recommendations. Therefore, providing high quality proteins in low quantity might be an opportunity worth exploring.

Among dietary proteins, milk proteins, and in particular whey proteins, are rich in essential amino acids. However, the processing of the whey protein can impact its quality; thus, the processing of the whey protein source should be considered when choosing a high-quality whey protein. Prolacta®, a native whey protein produced by low temperature, cold filtration of pasteurized fresh milk, exhibits greater digestibility and better amino acid profiles as well as a higher concentration of immunoglobulins and lactoferrin than whey proteins. Given this, Prolacta® might be a good source of protein when formulating YCF to provide high quality protein.

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Lactose

One of the main issues in our industrialized countries is the increased free sugar consumption, as observed in the Nutri-Bébé study performed on toddlers in France (Chouraqui, 2019). Thus, replacing free sugars by lactose is of value to nutrition. Lactose has several advantages: it has less impact on the glycaemia rise than glucose/saccharose or maltodextrin. Its hydrolysis in the small intestine leads to the liberation of galactose, one of the main substrates of brain function. A second advantage is that, lactose is a prebiotic, which means that it promotes beneficial gut microbiota composition. Finally, it has also been shown that an infant formula formulated with 100% lactose increases the absorption and retention of calcium, magnesium and manganese compared to a formula with sucrose or corn starch hydrolysate (Ziegler, 1983). Moreover, EU regulations permit the statement 'lactose only' to be made on infant formula and follow-on formula, provided that lactose is the only carbohydrate present in the product.

Regarding formulas, Lactose is a staple ingredient. It can be incorporated up to 40%, depending on the formulation. Paying particular attention to lactose as a key ingredient is very important as it can play a big role in formula consistency. For example, Riboflavin, also called vitamin B2, has a particular affinity with Lactose crystals and thus is responsible for the yellowish color of lactose. Depending on the season, cow feed and lactose processing, the Riboflavin content can vary by as much as double. That is why controlling the consistency of a formula by selecting the right lactose can mean a gain in time and money through improved formula quality and avoidance of non-conformities. The selection may involve either sourcing a lactose with a guaranteed B2 vitamin content or choosing a B2-free lactose.

The World Health Organisation recommends exclusive breast feeding for the first 6 months and Lactalis Ingredients fully supports this recommendation. For baby, breast milk is the best nutrition, the most adapted to its needs. Before using infant formula instead of breast milk, consumers should first speak to a health care professional.

CONCLUSION

Toddlerhood is a period of transition involving major environmental changes, including of nutrition. Whether from a nutritional point of view or in terms of parental expectations, each region or country has its own specificities and recommendations that can result in nutritional deficiencies or excesses during this transition period.

Developing specific baby food products, especially young children formula, can help to fill these nutritional gaps to keep pace with this important growth phase of toddlerhood.

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