AVAILAÇÃO DOS TEORES DE PROTEÍNA EM FÓRMULAS INFANTIS DE SEGUIMENTO

EVALUATION OF PROTEIN CONTENT IN INFANT FORMULAS FOLLOW-UP

Talita Leite Beserra¹
Francisca Gracielly Reinaldo Galvão²
Vanessa Figueiredo Cruz Braga³
Helder Cardoso Tavares⁴
José Ramon ALCântara da Silva⁵
Tatiane Leite Beserra⁶
Francyane Pessoa dos Santos⁷
Edna Mori⁸

RESUMO

A alimentação complementar é aquela oferecida à criança a partir do sexto mês até os dois anos de idade, sendo fundamental para o crescimento da criança. Tem-se observado um crescente uso de alimentos complementares industrializados, porém existe a possibilidade da inadequação destes alimentos com as necessidades das crianças ou com a legislação (RDC nº 44, de 19 de setembro de 2011). Este estudo objetivou avaliar os teores de proteína de fórmulas infantis de seguimento para lactentes e crianças de primeira infância, comercializadas em supermercados e farmácias do município de Juazeiro do Norte-CE. Trata-se de um estudo exploratório experimental, de abordagem quantitativa e qualitativa, utilizando como amostras, fórmulas infantis contendo designação na rotulagem “à partir do 6º mês”, de duas marcas distintas, totalizando sete amostras diferentes (4 da marca A e 3 da B). A determinação de proteína seguiu os protocolos descritos no manual da Association of Official Analytical Chemists para o método de Nessler. Os dados foram avaliados segundo o desvio-padrão simples, com significância de até 5%. Todas as amostras apresentam valores rotulados em conformidade com a legislação (RDC nº 44) para quantidade de proteína por 100 kcal, já em relação aos valores determinados experimentalmente, verificou-se que uma das amostras obteve valores acima do estabelecido. Das demais amostras analisadas, somente duas apresentaram valores similares dos rotulados, enquanto as outras forneceram valores inferiores. Sendo assim, embora as informações de rotulagem estejam em conformidade com a legislação, nem todos os teores encontrados estavam de acordo com o rotulado.

Palavras chaves: Fórmulas infantis; Alimentação complementar; Necessidades nutricionais; Proteína.

ABSTRACT

The complementary feeding is the one offered to the child from the sixth month until two years old, being fundamental for the development of the child. Increased use of complementary foods has been observed, but there is the possibility that these foods may be inadequate with the needs of the children or with the legislation (RDC N 44 of September 19th, 2011). This study aimed to evaluate the protein levels of infant follow-up formulas for infants and children of first childhood, marketed in supermarkets and pharmacies in the municipality of Juazeiro do Norte-CE. This is an experimental exploratory study, with a quantitative and qualitative approach, using as samples, infant formulas with a label designation “from the 6th month”, of two distinct brands, totaling seven different samples (4 of brand A and 3 of B). Protein determination followed the protocols described in the Association of Official Analytical Chemists (AOAC) (1990) manual for the Nessler method. The data were evaluated according to the simple standard deviation, with significance of up to 5%. All samples presented values labeled in accordance with the legislation (RDC N 44) for protein quantity per 100 kcal, already in relation to the values determined experimentally, it was verified that one of the samples obtained values above that established. From the other samples analyzed, only two presented similar values of those labeled, while the others provided lower values. It is concluded that, although the labeling information complies with the legislation, not all the contents found were in accordance with the labeling.

Key words: Infant formula; Complementary feeding; Nutritional requirements; Protein.
INTRODUCTION

From the age of six months, the nutritional needs of the child are no longer met only with breastmilk, although this remains an important source of calories and nutrients. It is at this stage that the child already presents neurological and physiological maturity to receive other foods, giving beginning to complementary feeding, but despite the provision of other foods the child should continue to breastfeed until two years or more, because the breast milk continues to nurture the child and protecting it against any diseases 1.

The appropriate complementary feeding should comprise a balanced composition of foods with adequate amount of macro and micronutrients (especially iron, zinc, calcium, vitamin A, vitamin C and folic acid), free of contamination, easy ingestion and acceptance, and prepared from foods commonly consumed by the family 2.

In recent decades, changes in food habits, the insertion of women in the labor market, fast access to technology and the diversity of food manufacturers have favored growth in the number of consumers of industrialized products. It includes in that context, the class of foods for infants (children up to the age of eleven months and 29 twenty nine days) and children of early childhood (children from 12 months to three years of age) 3.

The RDC N 44 of 19th September 2011, is one of the resolutions which aims to establish minimum requirements for security, identity, composition and quality you should obey the following formulas for infants and children in early childhood, which represents a step forward for the health of this public 4.

Given the importance of the issue arises the question whether such infant formulas that are in accordance with what the law calls for it to be considered as a food supplement, as well as, if they meet the needs of children and their labels are with values consistent with what the product actually has.

It can be assumed that the use of complementary foods industrialized countries has increased, due to its practicality, however there is the possibility of these foods are not fully adequate to the needs of children, as well as what the law calls; and possibly such values labelled can be at odds with actual values contained in the formulas.

In this way, bearing in mind that from the sixth month of life, the child is in full development and growth, in which the breast milk is no longer sufficient to meet all their nutritional needs, it is important to use an appropriate complementary feeding, which supports the breast milk. In this phase, the children need a greater intake of proteins that are necessary for the synthesis of proteins and tissue growth 5.

Since the use of infant formulas has increased, as being one of the dietary sources that the mothers use to complement the supply of children, due to its practicality and variety, it is of great relevance. A study with respect to the appropriateness of such products, because most of the times the mothers are laymen in the subject and end up offering children formulas that do not meet your needs, starting complementary feeding incorrectly, which can lead to arise, such as anemias, excess weight and malnutrition.

Therefore, in order to compare whether the levels of protein are in fact the same contained on labels and are within the standards required by legislation, the objective of this study was to evaluate the protein content of infant formulae, follow-up for infants and children in early childhood.

METHOD

It is an exploratory study of the experimental, quantitative-qualitative approach, performed with infant formulae, follow-up, commercialized in supermarkets and pharmacies in the municipality of Juazeiro do Norte-CE, with the aim of assessing the levels of protein.

The analyzes occurred in the Chemical Laboratory of the Faculty of Juazeiro do Norte - FJN, institution located in the municipality of Juazeiro do Norte, Ceará, in the period from April and May 2016.

There were used as samples for analysis, infant formulas in which there is an indication on the labelling of the Designation: from 6th month, two distinct brands (A and B), totaling seven different samples, being 4 to brand A and 3 to brand B.

In order to evaluate the levels of protein, we used the Nessler technique, described in the manual of the Association of Official Analytical Chemists - A. O. A. C. 6. The chemical composition of the sampled collected was performed in triplicate.

For statistical evaluation of the results, there was used the simple standard deviation, with a significance of up to 5%, which is a measure of dispersion, whose value reflects the variability of observations in relation to the average, which is available in Excel 2010, Microsoft. The values found were compared with those indicated on labels, in order to verify the comparability of information, and compliance with the law, using as a parameter the RDC N 44 of 19th September, 20114.

RESULTS AND DISCUSSION

Later analyzes for determination of proteins, the data were assessed according to their percentage in the sample of 100g, compared with the amount described on the label, as well as the values relating to the amount of protein per 100 kcal of both values (determined analytically and labelled), as presented in Table 2. The determinations in triplicate were evaluated using the simple standard deviation with significance <5%.

According to the table below, it was found that the samples (F3 and F7) presented a quantity of proteins that are compatible with those described in the labelling of products, but four samples (F1, F4, F5 and F6), showed quantities below, with an average of about 3% difference, and one of the samples (F2). Quantities above described on the label were of approximately 4% more. In this way, it was possible to observe that only two samples presented values trust, in accordance with the labelling of the products analyzed.
Taking into consideration that the resolution N 44 of 19th September, 2011\(^4\), advocates, since that is the legislation that establishes the minimum requirements of identity, composition, quality and safety to which the infant formulae. Follow-up for infants and children from infancy must obey the amount of protein for the follow-up formulae based on cow’s milk proteins do not hydrolyzed, must be at least 1.8 g/100 kcal (0.45 g/100 kJ) and at a maximum of 3.5 g/100 kcal (0.8 g/100 kJ), already for the infant formulae. Follow-up to the base of isolated soy protein or a mixture of these with cow’s milk proteins must be at least 2.25 g/100 kcal (0.56 g/100 kJ) and at a maximum of 3.5 g/100 kcal (0.8 g/100 kJ). It was possible to observe that all the protein described on the labels of the samples is in agreement with the values established by legislation.

However, when comparing the results obtained in the analysis with the quantities laid down by legislation, it has been observed that one of the samples (F2) met with value (3.99g/100 kcal) above the established.

According to Ziegler et al.,\(^7\), high protein feedings have been associated with an increased risk of obesity, especially when between 8 and 24 months are equal to or greater than 4 g/kg/d (± 16% of the total energetic value). As Almeida\(^8\) says that, in children, a high protein intake is associated with greater adiposity, greater precocity at the age of adipocyte detent, and a stimulation of the release of insulin. With all the consequences of anabolic, so you should take into account the maximum value of protein recommended by Resolution N 444, in order to avoid protein overload in children with their possible consequences.

Already Herin and Aperia\(^9\) describe that the kidneys, in structural terms, are already relatively well formed at birth; but their functional capacity is still immature during the first year of life. By the reason of such immaturity, the infant presents a significant limitation in relation to loads tolerated of electrolytes and proteins, in addition to possessing difficulty to deal with both excess and deficiency of water. Consequently, the maintenance of homeostasis of your body is greatly dependent on your diet\(^7\).

It is shown, then, that the information contained in labels should provide reliable values, once the excess of proteins in a formulation playground may incur future complications for children, as observed in the sample F2, which has a higher value, detected by analysis that the legislation recommends.

To this end, it is necessary to conduct further studies on this issue, because in national and international literature there are studies related to this subject, it is not possible to compare the results obtained with others.

In this way, it is of fundamental importance to the supervision of such formulations, aiming to guarantee of formulas with appropriate amounts of nutrients and the nutritional security of infants and children in early childhood. Studies that determine the quantities of other nutrients present in the samples are important, in order to also check if the other nutrients are in accordance with the law or even, if they are in accordance with the indicated on the label.

**CONCLUSION**

After the analysis of the labelling of infant formulae, referring to the amount of protein, it is observed that the greater part of the samples (four) evaluated lies with the smaller quantities than those described on the label, although all the values described in the labels are within the required by legislation. Taking into consideration the quantities found in analyzes, one of the samples is above the maximum allowable limit of protein, as well as the value higher than that found in the label.

**REFERENCES**


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Table 1 - Comparison between protein content determined and labeled.

<table>
<thead>
<tr>
<th>Sample</th>
<th>Protein (%)</th>
<th>Labelling (%)</th>
<th>Amount of protein for 100kcal according to the labelling (g)</th>
<th>Amount of protein for 100kcal according to found (g)</th>
</tr>
</thead>
<tbody>
<tr>
<td>F1</td>
<td>11.64</td>
<td>15.00</td>
<td>3.10</td>
<td>2.40</td>
</tr>
<tr>
<td>F2</td>
<td>18.27</td>
<td>14.00</td>
<td>3.06</td>
<td>3.99</td>
</tr>
<tr>
<td>F3</td>
<td>12.79</td>
<td>12.00</td>
<td>2.43</td>
<td>2.59</td>
</tr>
<tr>
<td>F4</td>
<td>10.75</td>
<td>14.00</td>
<td>2.89</td>
<td>2.22</td>
</tr>
<tr>
<td>F5</td>
<td>12.78</td>
<td>15.00</td>
<td>3.19</td>
<td>2.64</td>
</tr>
<tr>
<td>F6</td>
<td>11.61</td>
<td>15.00</td>
<td>3.10</td>
<td>2.47</td>
</tr>
<tr>
<td>F7</td>
<td>11.38</td>
<td>11.00</td>
<td>2.22</td>
<td>2.30</td>
</tr>
</tbody>
</table>


8. Almeida EB. Relação entre o tempo de aleitamento materno exclusivo e o IMC aos 6, 7, 8 e 9 anos de idade. [Dissertação]. Lisboa: Faculdade de Medicina da Universidade de Lisboa; 2012.


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