Brief original article

Trans-fatty acid content of food products in Spain in 2015

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**A R T I C L E   I N F O**

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**A B S T R A C T**

Objective: To ascertain the content of trans-fatty acids (TFA) in food products in Spain in 2015 and assess trends in TFA content since 2010.

Methods: We analysed the fat content of 277 food products purchased in Spanish supermarkets in 2015 and calculated both the total fat and TFA content and the proportion of TFA to total fats. The results obtained in 2015 were compared to those yielded by a similar study in 2010.

Results: In 2015, the majority of food products studied had a TFA content of less than 0.2 g/100 g product, and a TFA/total fat ratio of less than 2%. No significant increases were found compared to 2010. Food groups with a higher TFA content were dairy products of possible natural origin.

Conclusions: TFA content in Spain is low and has significantly fallen since 2010.

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**Contenido de ácidos grasos trans en los alimentos en España en 2015**

**R E S U M E N**

Objetivo: Conocer el contenido de ácidos grasos trans en los alimentos en España en 2015 y evaluar la tendencia desde 2010.

Métodos: Se analizó la composición grasa de 277 alimentos adquiridos en supermercados en España en 2015. Se calcularon el contenido en ácidos grasos trans y en grasas totales, y el porcentaje de ácidos grasos trans respecto de la grasa total. Se compararon los resultados con los de un estudio similar realizado en 2010.

Resultados: En 2015 la mayoría de los alimentos estudiados tenían menos de 0.2 g de ácidos grasos trans por 100 g de producto, y menos del 2% de ácidos grasos trans respecto a las grasas totales. No se hallaron aumentos significativos desde 2010. Los grupos con contenidos más altos de ácidos grasos trans eran derivados lácteos, con posible origen natural.

Conclusión: El contenido de ácidos grasos trans en España es bajo y se ha reducido significativamente desde 2010.

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**Introduction**

Trans fatty acids (TFA) are unsaturated fatty acids with at least one double bond in the transconfiguration.

This configuration can come about naturally from ruminant-based meat and dairy products, or artificially through partial hydrogenation of vegetable oils in the food industry and manufacturing processes. There is scientific evidence to show that TFA intake is associated with cardiovascular diseases in different ways. In addition, associations between TFA intake and other diseases, such as diabetes mellitus, cancer and asthma, have also been proposed.

Due to those health risks, it is clear that TFA intake should be as low as possible, and that TFA content in food products should be reduced or eliminated. Some countries have regulated TFA content, such as Denmark, by means of an Order which came into force in 2003. In Spain, the 2011 Food Safety and Nutrition Act included a specific provision targeted at reducing artificial TFA in food products.

Although an important decrease in TFA content and intake has been detected in some countries, as a result of statutory regulation, health promotion actions and voluntary food-industry initiatives, more efforts are nevertheless called for.

The aim of this study was thus to ascertain the average TFA content of food products in Spain in 2015, and assess time trends in TFA content since 2010 when an earlier study was undertaken.

**Methods**

To assess the TFA content in Spain, food products were acquired from hypermarkets and supermarkets countrywide.

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Table 1
Trans-fatty-acids and total fat content (g/100 g of product) of food products in Spain.

<table>
<thead>
<tr>
<th>Food groups</th>
<th>2010</th>
<th>2015</th>
<th>p&lt;sub&gt;1&lt;/sub&gt;</th>
<th>2010</th>
<th>2015</th>
<th>p&lt;sub&gt;1&lt;/sub&gt;</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Mean</td>
<td>SD</td>
<td>Mean</td>
<td>SD</td>
<td>Mean</td>
<td>SD</td>
</tr>
<tr>
<td>Table 2</td>
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</tbody>
</table>

Table 2
Average proportion of trans-fatty-acids/total fats in food products in Spain.

<table>
<thead>
<tr>
<th>Food groups</th>
<th>2010</th>
<th>2015</th>
<th>p&lt;sub&gt;1&lt;/sub&gt;</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>TFA/total</td>
<td>TFA/total</td>
<td></td>
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<tr>
<td></td>
<td>fats</td>
<td>fats</td>
<td>p&lt;sub&gt;1&lt;/sub&gt;</td>
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</tbody>
</table>
of these decreases proving statistically significant (salty snacks, confectionary and pastries, chocolates, biscuits and chips), and indicated only a few non-significant increases (Table 1).

The average proportion of TFA to total fats in 2015 was lower than 2% across all food-product groups, except yoghurts and dairy products (2.30%), butter (2.45%) and spreadable cheeses (2.52%), as shown in Table 2. Non-significant increases were found and there were some significant reductions in salty snacks, confectionary and pastries, chocolates, biscuits, and chips.

Discussion

There is solid scientific evidence to show an association between TFA intake and cardiovascular diseases. A reduction in TFA content in food products and TFA intake should thus be recommended. While TFA content in Spain was reported to be high by a number of studies, one study suggested that in 2010 TFA content had been reduced in the majority of the food groups studied.

This study confirms the situation found five years previously. The comparison between TFA content in 2010 and 2015 showed that there had been no significant changes. In some groups, such as breakfast cereals, industrial bread and tomato sauce, TFA were undetectable, and in other groups, significant reductions were even found (salty snacks, confectionary and pastries, chocolates, biscuits, chips). Some food groups displayed slight, non-significant increases but the magnitude of the content was so low as to be of no concern.

It is also interesting to establish the proportion of TFA to total fats because the majority of regulations use this ratio to set the permitted limit. Our study shows that only in three groups (yoghurts and dairy products, butter, and spreadable cheeses) is this proportion higher than 2%. Even so, TFA content in yoghurts and dairy products is very low (0.073% of the total product). Moreover, TFA of natural origin can be present in meat and dairy products from ruminants (which is the case in point). Another issue lies in the fact that in some groups, such as yoghurts and dairy products, total fat content has been significantly reduced, and this could go some way to explain the rise in the TFA/total fat ratio.

Insofar as TFA of natural origin is concerned, some studies have postulated that such TFA are not associated with cardiovascular diseases and, indeed, might even have some health benefits. More studies are needed to address this issue.

Following the Danish initiative, some laws in Europe (including the Spanish Food Safety and Nutrition Act) and the USA have sought to reinforce the reduction in TFA content in the case of food products. In June 2015, the US Food and Drug Administration (FDA) finalized its determination whereby food manufacturers were ordered to remove TFA from their products in 2018. A combination of statutory regulations and voluntary actions would appear to be the most advisable strategy.

The social responsibility of food manufacturers in Spain warrants a special mention. The food industry has made remarkable efforts to reduce TFA since the consequences to health became known.

The main strength of this study is its strict methodology which successfully ensured comparability of the results obtained in 2010 and 2015.

One limitation might lie in the fact that the selected food-product sample belonged to leading consumer brands enjoying widespread distribution, whereas there are also other locally distributed, lower-impact brands which may have been overlooked by the study. Subsequent assessments are called for.

The main conclusion of our study is that the average TFA content of food products in Spain is low, and that in the context of a balanced diet, exposure to TFA should thus be minimal. Although it cannot be stated with certainty in the absence of data on TFA intake, it is safe to assume that, where exposure is low, the average intake in Spain would likewise be low. Nonetheless, regular surveillance of the TFA content of food products should be maintained. By way of a public health goal, reformulation of food products must be reinforced in order to ensure that the nutritional quality of food is improved.