EUROPEAN DAIRY ASSOCIATION
ASSOCIATION LAITIÈRE EUROPÈENNE
EUROPÄISCHER MILCHINDUSTRIEVERBAND

EDA POLICY CONFERENCE ON TRANS FATTY ACIDS

Brussels, 12th February 2008

– REPORT –

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➲ INTRODUCTION

Joop Kleibeuker - Ph.D., Secretary General of EDA

Dr. Kleibeuker welcomed all participants to the conference, and to an exchange of science-based views between scientific and political stakeholders in the field of *trans* fatty acids (TFA). He pointed out that naturally nutrient rich milk and milk products fit into a healthy diet and that dairy fat contains specific fatty acids, among them ruminant TFA, the health effects of which were discussed during the conference. In the past, it was believed that all TFA were associated with specific negative health effects. In 2005, the EDA organised its 1st policy conference on TFA to present reasons to make distinctions between different sources of TFA. At this 2nd policy conference new evidence on the need for distinctions between sources of TFA was presented by highly respected scientists from the EU and the USA.

Jan Steijns - Ph.D., Manager Nutrition Affairs Campina, Netherlands

Dr. Steijns introduced the programme and the speakers, and wished all participants an informative morning's discussion and hoped for a good interactive exchange between speakers and delegates.

➲ PRESENTATIONS

Adam Lock - Ph.D., University of Vermont, USA

General Introduction to Trans Fatty Acids

Dr. Lock gave an "Overview of the biology of *trans* fatty acids" starting with the biological functions of fatty acids and the definition of TFA pointing out that there are two predominant TFA sources in the diet, industrial and natural sources. While industrial TFA are formed during chemical partial-hydrogenation processes, the presence of TFA in milk fat is due to bacterial biohydrogenation of unsaturated fatty acids in the rumen of the cow. Dr. Lock pointed out that significant differences exist in the total amount and isomer profiles of TFA from industrial and naturally-derived sources. Furthermore, scientific evidence increasingly indicates differences in human health effects between industrial and natural sources of TFA.

Dr. Lock showed epidemiological studies that found a higher risk of coronary heart disease (CHD) with higher total TFA intake. He stressed that those studies have used industrial sources of TFA and that data has been simplified to conclude that any and all TFA are associated with increased CHD risk. An analysis by Dr. Lock and colleagues looking into the relative risk of CHD for industrial and ruminant TFA separately showed that there is no increase in CHD risk from higher natural TFA intake compared to industrial TFA. This is also the case when looking at actual intake of ruminant TFA where no increased risk is seen even at high intake (up to 5g/d). Also other studies using 3-4 times the normal intake of ruminant TFA have not shown any negative effects.

Dr. Lock summarised that industrial TFA have been associated with a number of chronic human diseases, while effects have not been observed for natural TFA. Those differences are quite likely based on variations in TFA isomer content and profiles between natural and industrial sources. Finally, Dr. Lock stressed again that biological effects of dietary fats are often oversimplified and that not all TFA are equal. It is important to differentiate between sources, individual isomers and their specific effects on human health.

Jean-Michel Chardigny - Ph.D., INRA - Institut National de la Recherche Agronomique, France

Latest Study: Transfact I

Dr. Chardigny presented the findings of the TRANSFACT (Trans Fatty Acids CollaboraTion) project, a clinical study looking into the question of whether all *trans* monounsaturated fatty acids have similar effects on cardiovascular disease (CVD) risk factors. This randomized, double-blind, controlled, cross-over study aimed at determining the differential treatment effect between ruminant (dairy) TFA and industrially produced TFA from vegetable origin.

Forty healthy volunteers (19 men and 21 women) participated in the study. On a randomised crossover basis the subjects consumed two 3 weeks dietary regimens, high ruminant TFA and high industrial TFA, with a daily intake of 10-12 g (about 5-5.5 energy%). The high ruminant TFA interventions used dairy products containing elevated levels of natural TFA. The industrial TFA interventions utilized partially-hydrogenated fats and oils. The primary outcome marker was HDL-cholesterol, but other clinical CVD markers, such as LDL- and total cholesterol and apolipoproteins (Apo), were measured as well.

The main conclusion was that ruminant TFA did not decrease HDL-cholesterol, in contrast to industrial TFA. TFA from milk fat appear to have different effects on HDL- and LDL-cholesterol and on Apo-A1 and Apo-B in humans compared to industrially produced TFA. There was no evidence that ruminant TFA have a negative effect on human health. The results also showed indications of a relationship between gender and TFA source on CVD risk. Women (but not men) responded differentially to the two types of TFA. This finding warrants further research in the future.

Dr. Chardigny concluded that due to the low amount of TFA from natural sources in foods and the absence of a negative effect on HDL-cholesterol, natural TFA isomers may not impact significantly public health. The results of this first study comparing the effect of the two sources of monounsaturated TFA isomers will be published in the March issue of the American Journal of Clinical Nutrition. Complementary studies are currently carried out (Transqual project).

Marianne Uhre Jakobsen - Ph.D., Aarhus University Hospital, Denmark

Latest Study: Intake of Ruminant TFA & Coronary Heart Disease Risk

Dr. Jakobsen presented her recent investigation on the association between the absolute and the energy-adjusted intake of ruminant TFA and the risk of CHD. She reminded delegates that ruminant and industrial fats contain the same TFA isomers but their isomeric profile differs and TFA isomers may have different biological effects. Dr. Jakobsen pointed out that previous observational studies did not find an association between intake of ruminant TFA and CHD risk, possibly due to lower ruminant TFA intakes compared to industrial TFA intakes. The Danish population may be one of the best populations to study the association between intake of ruminant TFA and CHD risk due to the wide range of intake among both women (0.5-3.1 g/d) and men (0.6-4.1 g/d).

The study was an 18-year follow-up study of 3686 Danes aged 30-71 years at baseline and without previous CHD. The results showed no association between ruminant TFA intake and CHD risk among women and men. Indeed, there was an indication of an inverse association between ruminant TFA intake and CHD risk among women. This association was significant for women less than 60 years. Dr. Jakobsen concluded that this study suggests that intake of ruminant TFA, in amounts actually consumed in diets, are not associated with a higher risk of CHD and that high intake of ruminant TFA from dairy and meat products may be of no concern to public health. Whether ruminant TFA intake is even protective against CHD among women cannot be concluded from this study.

Frédéric Destaillats - Ph.D., Nestlé Research Center, Switzerland

Future Outlook & Scientific Summary

Dr. Destaillats, replacing Bruce German from the University of California Davis, USA, started his contribution with a brief overview on the role of fat in foods and the reasons behind the introduction of hydrogenated vegetable oils in food production. Manufacturers were increasingly interested to use vegetable oils that were promoted as heart-healthy in their foods. As liquid fats are not delivering the same physical characteristics than solid fats, vegetable oils were partially hydrogenated to imitate the physical properties of solid fats. This hydrogenation process, however, introduces TFA isomers. When science caught up and showed that industrial TFA had a negative effect on CVD risk markers, partial hydrogenation was deemed an inappropriate chemical technology and methods have been developed to reduce the level of industrial TFA in foods.

Dr. Destaillats also pointed out that some years ago there was a big gap in understanding the effects of natural TFA and that legal actions regarding TFA were covering both natural and industrial TFA. However, recent studies have shown that TFA are not equal and that evidence now exists that underlines the unique biological effects of natural TFA. The manner in which TFA are formed in dairy cows is now better understood, and animal studies to investigate the basic mechanism and effects behind the biological properties of natural TFA are being conducted worldwide. Future TFA research projects will give better insights in the potential beneficial health effects of ruminant fats containing vaccenic and rumenic acid.

Theo Ockhuizen - Ph.D., Chairman EDA Nutrition Working Group

Position of the European dairy industry

At the beginning of his presentation, Dr. Ockhuizen gave examples of existing policy measures regarding TFA. The US and Canada have chosen a mandatory labelling approach and require an indication of the TFA content above a certain threshold to be displayed on pack. Denmark has taken a different measure, prohibiting by law the use of industrial TFA above a certain level in food production. While the US and Canadian labelling measures do not distinguish between TFA sources, the Danish legislation excludes ruminant TFA. In 2005, EDA organised its 1st TFA policy conference in response to the EFSA opinion on TFA from 2004. Based on the available evidence at that time, EDA had already questioned the relevance of labelling TFA.

Looking at recent studies on natural TFA, including those presented at this conference, no evidence of negative health effects of ruminant TFA exists – even at higher intake levels. Average habitual intake of dairy TFA is low, contributing only minimally to energy intake. Certain dairy TFA may even have beneficial effects.

Dr. Ockhuizen stated that dairy products are part of the traditional European diet and should be promoted for their significant contribution to the nutrient intake such as high quality protein and several key minerals and vitamins. He underlined once more that there is no evidence of negative effects of dairy TFA on human health and in order to avoid consumer confusion, unwanted effects on dairy consumption and public health (e.g. a reduction in nutrient intake) and a negative image for healthy dairy products, dairy TFA should not be taken into consideration for labelling or nutrient profiling for claims.

➲ DISCUSSION

The Questions & Answers Session was as an official part of the EDA TFA Policy Conference.

Questions fell broadly into five areas:

1. Is there sufficient evidence to make a clear distinction between different forms of TFA?

2. Is it possible to say that there are no negative effects of dairy TFA on human health?

3. Are intakes of dairy TFA sufficient to be of relevance to public health?

4. Is it feasible from an enforcement point of view to exempt dairy TFA from nutrition labelling on a composite product containing industrial and ruminant TFA?

5. Are the reported positive benefits of CLA relevant at actual dairy intakes?

A brief synopsis of the responses to each question follows.

1. Is there sufficient evidence to make a clear distinction between different forms of TFA?

Question: Do the results from the Transfact study provide sufficient evidence to differentiate between different forms of TFA?

Response: The lead scientist of the Transfact study responded that clear differences between the different TFA sources were observed. He stated that the results showed that ruminant TFA did not decrease HDL-cholesterol ('good' cholesterol), whereas industrial TFA did.

The design of Transfact allowed comparisons to be made between the different TFA treatments used in the study.

2. Is it possible to say that there are no negative effects of dairy TFA on human health?

Question: Are the results of Transfact, and of existing epidemiological studies, sufficient to say that there are no negative effects of dairy TFA on heart health?

Response: Speakers agreed that taken as a whole, existing scientific evidence shows the same trend, i.e. that there are no negative health effects of ruminant TFA. The speakers also agreed that there is enough data to say that ruminant TFA are not an issue. Dr. Lock stated that in his review of all the available evidence, he has not seen any data that indicates any negative effects. And he stressed that this data is based on the normal nutritional intake of natural TFA from dairy and meat.

With regard to Transfact and its effects on LDL- cholesterol ('bad' cholesterol) and total cholesterol, speakers agreed that a single study cannot answer all the questions posed around dairy TFA and heart health, and that further research is needed to investigate individual TFA and their effects. Additional studies are planned for the future and it was predicted that in 2 to 3 years time the complete picture will be known.

The speakers were also in agreement that science needs to go beyond just measuring cholesterol when looking at cardiovascular disease risk, and that it is important to look at both single risk markers and a combination of different risk factors in order to get an accurate picture.

The totality of the available data from different study types, intervention studies and epidemiological studies, is key when discussing the question of the health effects of ruminant TFA, and to date no negative effects of dairy TFA have been proven.

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3. Are intakes of dairy TFA sufficient to be of relevance to public health?

Question: Are intakes of natural TFA, from dairy and meat, of relevance from a public health perspective?

Response: Participants were in agreement that even with higher dairy consumption, the contribution of natural TFA to energy intake is below recommended levels. Furthermore, it was stated that nutritional science needs to look at whole foods and not just individual components. Nutrients are defined by both chemistry and physiological effects within the food matrix. TFA in dairy products are intrinsic to their matrix and the potential for reformulation is limited. In contrast, many manufacturers can reduce the industrial TFA content of their products.

4. Is it feasible from an enforcement point of view to exempt dairy TFA from nutrition labelling on a composite product containing industrial and ruminant TFA?

Question: If dairy TFA were given an exemption from TFA declarations on pack, how would enforcement agencies deal with foods that contain both dairy trans fatty acids and industrial trans fatty acids? Particularly, since naturally occurring TFA, e.g. vaccenic acid, is also present in industrial fat.

Response: The declaration of TFA on the label can be done using information from standard nutrition composition tables. Agencies dealing with legal enforcement are already familiar with using these as a tool. Moreover, a manufacturer using butter or margarine to produce a food, e.g. a cookie, can ask their supplier about the TFA content of the ingredients they supply, making labelling declarations of industrial trans on composite foods which also contain dairy TFA relatively straight forward.

In addition, from an analytical point of view it is possible to distinguish between natural and industrial sources of TFA, although the measurements techniques are rather sophisticated. It is important to show the purity of milk fat which can easily be done with the existing tools. In Denmark, where legislation forbids the use of industrial TFA in food production above a certain threshold, but excludes natural TFA from the measurement, the content of butyric acid is used to make the distinction between TFA sources.

5. Are the reported positive benefits of CLA relevant at actual dairy intakes?

Question: Considering the small amount of CLA in milk fat, how relevant is the CLA intake with average dairy consumption in terms of positive benefit to human health?

Response: Whilst benefits from CLA have been seen in animal studies, it was agreed that people would have to drink a lot of milk to get the amount needed to see an acute beneficial effect. It is possible that habitual low intakes of CLA have a positive effect but we don't have enough data on this yet. No negative effects of CLA have been shown.

A firm recommendation on this was requested from EDA. Recommendations were also requested with regard to the dietary guidelines in many countries that recommend consuming low fat dairy.

Brussels, 12th February 2008

➲ SUMMARY OF THE FINDINGS

- Based on existing data, there is no scientific evidence to show negative effects of TFA found naturally in milk and meat on human health.
- Recent data suggests that ruminant TFA might even have beneficial effects and further research is being conducted in this area.
- Intakes of dairy TFA from dairy products are not of nutritional importance in terms of a negative impact on human health.

➲ EDA MESSAGES

Dairy is traditional part of the diet for many centuries.

Dairy contributes high-quality protein and many vitamins and minerals such as calcium.

There is no evidence on negative health effects from natural TFA occurring in meat and dairy.

Due to the specificity of the raw material, reformulation of natural TFA content in dairy is not or only very limited possible.

Labelling of dairy TFA will confuse and unduly alarm the consumer and produce a negative image for healthy dairy products.

Labelling of dairy TFA will have unwanted effects on dairy consumption and public health (e.g. reduction in nutrient intake).

Labelling of dairy TFA will place dairy based foods at a marketing disadvantage.

➲ EDA POLICY RECOMMANDATION

No consideration of dairy TFA for nutrition labelling or nutrient profiling for claims.

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