

The good, the bad and the *ugly* – why the EU should eliminate industrially produced trans fats

European Chronic Disease Alliance position on the need for EU regulation to set upper limits for industrially produced trans fats

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Summary

Trans fatty acids and particularly industrially produced trans fatty acids are widely recognised as the most harmful – ‘the ugly’ – dietary fat, increasing the risk of a number of chronic diseases, in particular coronary heart disease.

Several countries in the EU and beyond have introduced legislation setting a statutory upper limit of industrially produced trans fatty acids acknowledging that this is the most effective intervention to protect public health and address health inequalities.

ECDA urges the European Commission to bring forward a proposal for an EU-wide regulation to virtually eliminate industrially produced trans fatty acids in foodstuffs marketed in the EU with no further delay.

I. Introduction: trans fatty acids and their detrimental impact on health

It is often said that fat is fat. However, the *quality* of the dietary fat may actually be more important than the *quantity*.^{1,2}

Trans fatty acids (TFAs) are saturated fats found in foods obtained from ruminants, such as dairy products and meat, and in industrially produced partially hydrogenated vegetable oils – referred to as industrially produced TFAs.³

TFAs are widely recognised as the most harmful – ‘the ugly’ – dietary fat and the detrimental effects of consumption of TFAs, in particular on increasing the risk of coronary heart diseases (CHD), is no longer disputed.^{4,5}

¹ Keys A. Seven Countries. A multivariate analysis of death and coronary heart disease. Chapter 14, Diet. Harvard University Press Cambridge, Massachusetts and London, 1980, pp 248-262.

² Kromhout D. and Bloemberg B. Diet and coronary heart disease in the Seven Countries Study. Chapter 2.1 in: Prevention of coronary heart disease. Diet, lifestyle and risk factors in the Seven Countries Study. Kromhout D., Menotti A. and Blackburn H. (eds). Kluwer Academic Publishers, Norwell, Massachusetts 02061 USA.

³ Shauna M Downs, Anne Marie Thow and Stephen R Leeder. The effectiveness of policies for reducing dietary trans fat: a systematic review of the evidence. Bull World Health Organ 2013;91:262–269H; doi:10.2471/BLT.12.111468

⁴ I A Brouwer, A J Wanders and M B Katan, Trans fatty acids and cardiovascular health: research completed? European Journal of Clinical Nutrition 67, 541-547 (May 2013)

⁵ James N Kiage, Peter D Merrill, Cody J Robinson, Yue Cao, Talha A Malik, Barrett C Hundley, Ping Lao, Suzanne E Judd, Mary Cushman, Virginia J Howard, and Edmond K Kabagambe, Intake of trans fat and all-cause mortality in the Reasons for Geographical and Racial Differences in Stroke (REGARDS) cohort, Am J Clin Nutr. 2013 May; 97(5): 1121–1128.

This increased risk of coronary heart disease is mediated by increases in low density lipoproteins (LDL) – known as ‘the bad’ cholesterol. Other adverse effects of TFAs include promotion of inflammation and endothelial dysfunction, and possible effects on coagulation, insulin resistance and displacement of essential fatty acids from membranes.⁶

Studies looking at habitual TFAs consumption and links to coronary heart disease, indicate that a higher intake of *trans*-fat was associated with an increased risk of CHD.⁷

TFAs intake is also associated with greater incidence of kidney disease. Indeed, experimental animal models have suggested that an accumulation of excessive fat in the blood (hyperlipidaemia) is linked to progressive kidney failure.⁸ Cardiovascular diseases (CVD) are a major cause of morbidity and mortality at all stages of chronic kidney disease.

Consumption of industrially produced TFAs is also connected to the development of Non Alcoholic Fatty Liver Disease (NAFLD) and Nonalcoholic Steatohepatitis (NASH)⁹, an inflammatory liver condition that can lead to scarring, cirrhosis and liver cancer, as well as cardiovascular disease.¹⁰ TFAs are also causing factors of breast and colorectum cancer^{11 12 13}. Consumption of industrially produced TFAs may increase risk of other conditions such as infertility, endometriosis, gallstones, Alzheimer’s disease and diabetes.^{14,15}

Industrially produced TFAs and ruminant TFAs have similar metabolic effects and recent studies provide a growing body of evidence to indicate that there is no clinical difference in the effects of trans fats from natural and commercial sources. However, the relatively small amount of dietary trans fats in natural sources is unlikely to have significant adverse health effects by comparison to the much larger quantities of industrially produced TFAs consumed in a processed diet. Whether very high intakes of ruminant TFA could affect CHD risk is unresolved, but very few persons habitually consume such high levels.¹⁶

In 2008, the European Parliament’s policy department on economic and scientific policy published a study on industrially produced TFAs in foods reviewing health hazards and existing legislation in and

⁶ R Uauy A Aro R Clarke, R Ghafoorunissa, M L’Abbe’, D Mozaffarian M Skeaff, S Stender and M Tavella. WHO Scientific Update on trans fatty acids: summary and conclusions. European Journal of Clinical Nutrition (2009) 63, S68–S75

⁷ Stampfer et al, [Dietary Fat Intake and Risk of Coronary Heart Disease in Women: 20 Years of Follow-up of the Nurses’ Health Study](#), AJE, 2004

⁸ Keane WF, Kasiske BL, O’Donnell MP. Hyperlipidemia and the progression of renal disease. Am J Clin Nutr 1988; 47:157–60

⁹ B Neuschwander-Tetri, D Ford, S Acharya, G Gilkey, M Basaranoglu, L Tetri, and E Brunt; Lipids . 2012 October; 47(10): 941–950. doi:10.1007/s11745-012-3709-7.

¹⁰ [The Burden of Liver Disease in Europe – A Review of Available Epidemiological Data](#), EASL, Geneva, February 2013;

¹¹ V. Chajes, A.C. Thiebaut, M. Rotival, E. Gauthier, V. Maillard, M.C. Boutron-Ruault, et al. Association between serum trans-monounsaturated fatty acids and breast cancer risk in the E3N-EPIC Study Am J Epidemiol, 167 (11) (2008), pp. 1312-1320

¹² J. Wang, E.M. John, P.L. Horn-Ross, S.A. Ingles. Dietary fat, cooking fat, and breast cancer risk in a multiethnic population. Nutr Cancer, 60 (4) (2008), pp. 492-504

¹³ L.C. Vinikoor, J.C. Schroeder, R.C. Millikan, J.A. Satia, C.F. Martin, J. Ibrahim, et al. Consumption of trans-fatty acid and its association with colorectal adenomas Am J Epidemiol, 168 (3) (2008), pp. 289-297

¹⁴ Teegala SM, Willett WC, Mozaffarian D. Consumption and health effects of trans fatty acids: a review. J AOAC Int 2009;92:1250–7. PMID:19916363

¹⁵ Mozaffarian D, Katan MB, Ascherio A, Stampfer MJ, Willett WC. Trans fatty acids and cardiovascular disease. N Engl J Med 2006;354:1601–13. doi:10.1056/NEJMra054035 PMID:16611951

¹⁶ D Mozaffarian, A Aro and WC Willett. Health effects of trans-fatty acids: experimental and observational evidence. European Journal of Clinical Nutrition (2009) 63, S5–S21

outside the EU. This study recommended that a ban on industrially produced TFAs should be considered at EU level.¹⁷

In 2009, the World Health Organization (WHO) concluded, in its scientific update on TFAs in the *European Journal of Clinical Nutrition*, that the information available was sufficient to recommend reducing significantly or virtually eliminating industrially produced TFAs from the food supply.¹⁸

II. Different approaches in the EU to reducing TFAs

Several authorities around the world have recognised that setting a statutory upper limit on industrially produced TFAs in the food supply is the most effective way to reduce intake at a population level and have adopted legislation to restrict industrially produced TFAs in the food chain. In the EU, three countries have done so: Austria, Denmark and Hungary. In EFTA, three countries have done so too: Iceland, Norway and Switzerland. In the US, several cities, including New York and Boston, have implemented such legislation.

Since the mid-1970s, average intake of TFAs in Europe has dropped from 6 grams per day to 2.6 grams per day.¹⁹ However, considering average intake alone masks differences in consumption levels between different countries and social groups. Notably, people from economically disadvantaged groups are likely to consume more TFAs by way of diet consisting of more processed foods.²⁰

The European Commission has already recognised that a statutory upper limit of TFAs is the most effective intervention to protect public health. In the Commission's decision not to continue infringement proceedings against Denmark, it wrote:

“Apart from the maximum limit of 2% for industrially produced TFAs in fats and oils, there appear in this case to be no other measures, such as the mandatory labelling of the products concerned, which would reach the same objective of public health and consumer protection but would restrict the intra-Community trade less.”

A systematic review of the effectiveness of policies for reducing TFAs, published in the WHO Bulletin in 2013, also found that national or local bans of industrially produced TFAs are the most effective health protection measures.²¹

In 2013, the US Food and Drug Administration announced its preliminary determination that industrially produced TFAs are not “generally recognized as safe” for use in food.²²

Moreover, experience has shown that industrially produced TFAs can be replaced with healthier substitutes without increasing the cost or reducing the quality of foods. Analyses of foods before and after implementation of legislative restrictions on the content of industrially produced TFAs in foods

¹⁷ Policy Department Economic and Scientific Policy, European Parliament, Trans Fatty Acids and Health: A Review of Health Hazards and Existing Legislation. November 2008 IP/A/ENVI/ST/2008-19 (PE 408.584)

¹⁸ R Uauy A Aro R Clarke, R Ghafoorunnisa, M L'Abbe', D Mozaffarian M Skeaff, S Stender and M Tavella. WHO Scientific Update on trans fatty acids: summary and conclusions. *European Journal of Clinical Nutrition* (2009) 63, S68–S75

¹⁹ Stender S, Astrup A, Dyerberg J. A trans European Union difference in the decline in trans fatty acids in popular foods: a market basket investigation. *BMJ Open* 2012;2:e000859. doi:10.1136/bmjopen-2012-000859

²⁰ [Prevention of cardiovascular disease](#). National Institute for Health and Clinical Excellence. June 2010.

²¹ Shauna M Downs, Anne Marie Thow and Stephen R Leeder. The effectiveness of policies for reducing dietary trans fat: a systematic review of the evidence. *Bull World Health Organ* 2013;91:262–269H; doi:10.2471/BLT.12.111468

²² [FDA takes step to further reduce trans fats in processed foods](#), Nov. 7, 2013

have demonstrated widespread compliance with little evidence of negative effects on food availability, price or quality.^{23,24}

In December 2015, the Commission published a report on trans fatty acids in Europe²⁵, as requested in the Food Information to Consumers Regulation.²⁶ The report summarises a preliminary analysis of the potential effectiveness of the measures that could be adopted at EU level. It concludes that ‘a legal limit for industrial TFA content would be the most effective measure in terms of public health, consumer protection and compatibility with the internal market.’ In October 2016, the European Commission launched an inception impact assessment (IIA) on limiting industrial trans fats in products in the EU²⁷, with the aim to ultimately lead to EU action.

The European Parliament also adopted in October 2016 a Resolution on Trans Fatty Acids²⁸ which calls upon the European Commission to establish as soon as possible an EU legal limit on industrial TFAs. A number of food companies have also indicated they are in favour of a legislative proposal.²⁹

III. Conclusion and recommendations

It is clear that a high intake of TFAs has a detrimental impact on health and constitutes an important risk factor for major chronic diseases, including cardiovascular disease, T2D, liver disease and cancer.

Industrially produced TFAs should be considered as an industrial food additive, having no demonstrable health benefits and posing clear risks to human health; they should be removed from the human food supply.

Considering the substantial evidence on the negative impact of TFAs on human health, ECDA recommends that the European Commission adopts a proposal for an EU-wide regulation to virtually eliminate industrially produced TFAs in food products marketed in the EU no later than 2018.

The ECDA contends that in addition to helping reduce mortality from cardiovascular and other chronic diseases, such a regulatory measure would contribute to addressing health inequalities. It would also contribute to achieving internal market objectives by harmonising food compositional standards.

²³ Angell SY, Silver LD, Goldstein GP, Johnson CM, Deitcher DR, Frieden TR et al. Cholesterol control beyond the clinic: New York City’s trans fat restriction. *Ann Intern Med* 2009;151:129–34. PMID:19620165

²⁴ Leth T, Jensen HG, Mikkelsen AA et al, The effect of the regulation on trans fatty acid content in Danish food *Atheroscler Suppl* 2006;7:53-56

²⁵ European Commission. Report from the Commission to the European Parliament and the Council regarding trans fats in foods and the overall diet of the Union population. SWD (2015) 268 final

²⁶ <http://eur-lex.europa.eu/legal-content/en/ALL/?uri=CELEX:32011R1169>

²⁷ http://ec.europa.eu/smart-regulation/roadmaps/docs/2016_sante_143_trans_fats_en.pdf

²⁸ <http://www.europarl.europa.eu/sides/getDoc.do?pubRef=-//EP//TEXT+TA+P8-TA-2016-0417+0+DOC+XML+V0//EN&language=EN>

²⁹ <http://www.ehnheart.org/media/news/1104-open-letter-to-european-commission-on-tfas.html>

About the European Chronic Disease Alliance (ECDA) www.alliancechronicdiseases.org

The European Chronic Disease Alliance (ECDA) is a coalition of 11 European health organisations sharing the same interests in combating preventable chronic diseases through European policies that impact health. ECDA represents millions of chronic disease patients and over 200 000 health professionals.

ECDA's mission is to reverse the alarming rise in chronic diseases by providing leadership and [policy recommendations](#) based on contemporary evidence.