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## **Dietary and circulating fatty acids and ovarian cancer risk in the European Prospective Investigation into Cancer and Nutrition**

### **Questions & Answers**

New results, published today in the journal *Cancer Epidemiology, Biomarkers & Prevention*<sup>1</sup> by scientists from the International Agency for Research on Cancer (IARC) and partners, suggest that higher intakes and circulating levels of trans fatty acids from industrial processed foods and from deep-frying fat may be associated with a greater risk of developing ovarian cancer.

#### **Can you tell us about this study and EPIC?**

The European Prospective Investigation into Cancer and Nutrition (EPIC) is one of the largest European prospective cohort studies focused on nutrition, lifestyle, and cancer. The EPIC study includes 521 330 participants recruited between 1992 and 2000 from 23 centres across 10 European countries.

This large-scale analysis of fatty acids and ovarian cancer was based on dietary estimates of various fatty acids from different food sources (animal, vegetable, and industrial) and on levels of fatty acids in the blood. The analysis showed that higher intakes of trans fatty acids that are formed during industrial processes (hydrogenation of vegetable oils; deep-frying fat) and are found in a myriad of highly processed foods were associated with higher risk of ovarian cancer.

#### **What kinds of foods contain trans fatty acids?**

Industrial trans fatty acid isomers are found in a variety of ultra-processed foods containing partially hydrogenated vegetable oils (such as pastries, cakes, biscuits, snacks, candies, and margarine) and in deep-fried fast food products.

#### **What is new in this study?**

This is the first prospective study showing a relationship between intake of industrial trans fatty acids and development of ovarian cancer. Previously, dietary intakes of industrial trans fatty acids have been reported to be associated with risk of breast cancer as well as prostate cancer and colorectal cancer.

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<sup>1</sup> Yammine S, Huybrechts I, Biessy C, Dossus L, Aglago EK, Naudin S, et al. (2020). Dietary and circulating fatty acids and ovarian cancer risk in the European Prospective Investigation into Cancer and Nutrition. *Cancer Epidemiol Biomarkers Prev*. Published online 2 July 2020. <https://doi.org/10.1158/1055-9965.EPI-19-1477>

## **Questions & Answers: Dietary and circulating fatty acids and ovarian cancer risk in the European Prospective Investigation into Cancer and Nutrition**

### **How significant is the risk?**

People with the highest intake levels of industrial trans fatty acids had a 34% higher risk of developing ovarian cancer compared with those with the lowest intake levels. The proportion of ovarian cancer cases that could potentially be attributed to consumption of industrial trans fatty acids was estimated to be 11.7%.

### **Were these results expected, and why?**

We had previously reported a positive association between dietary intakes of industrial trans fatty acids and breast cancer risk in the EPIC cohort. Associations with other cancer sites have also been reported in the literature, although with inconsistent findings for ovarian cancer. Our aim was to clarify whether these particular synthetic trans fatty acids could affect the development of ovarian cancer, by using one of the largest cohort studies in EPIC. There are currently no data from experimental studies that support this finding; however, we know that industrial trans fatty acids affect obesity, levels of estrogens, and inflammation, which are all known risk factors for ovarian cancer.

### **How do fatty acids affect the risk of developing cancer?**

No experimental studies are available on the effects of industrial trans fatty acids on cancer development. This limits the interpretation of biological pathways underlying the association between intake of industrial trans fatty acids and development of ovarian cancer. However, data from epidemiological studies have suggested that industrial trans fatty acids affect obesity, levels of estrogens, oxidative stress, and inflammation, which are all known risk factors for ovarian cancer and which could explain, at least partly, the positive association between these fatty acids and ovarian cancer.

### **Are these results in line with what is known about trans fatty acids and the associated risk of other types of cancer?**

This positive association between industrial trans fatty acids and ovarian cancer is in line with results obtained for breast cancer, pancreatic cancer, and several other cancer types, such as prostate cancer and colorectal cancer. Further prospective studies are needed to confirm this association.

### **What are your recommendations based on these results?**

Eliminating intake of industrial trans fatty acids by reducing the consumption of industrial processed foods and deep-fried fast foods could offer a straightforward public health action for reducing the risk of ovarian cancer and many other chronic diseases, including other cancer types, that have been shown to be related to increased intake of industrial trans fatty acids. These results support the World Health Organization (WHO) REPLACE initiative to eliminate industrial trans fatty acids from industrial processes.