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B-069 - Dietary Iron And Breast Cancer Risk ñ Modulation By An Antioxidant Supplementation In The SU.VI.MAX Randomized Controlled Trial

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Purpose:
Epidemiological evidence suggested that red and processed meat intake may be associated with increased breast cancer risk. Recent experimental studies showed that, among the pro-carcinogenic compounds found in red/processed meat, heme iron may be particularly involved in the initiation of carcinogenesis, through lipid peroxidation. Thus, it could be hypothesized that iron intake may all the more increase cancer risk as diet has a low antioxidant potential and a high lipid content. Our objectives were to prospectively investigate the association between dietary iron intake and breast cancer risk, and its potential modulation by antioxidant supplementation and lipid intake.

Methods:
The SU.VI.MAX study was a randomized, double-blind, placebo-controlled trial (1994-2002) in which participants received low-dose antioxidants or a placebo. This prospective study included 4646 women. 188 incident breast cancers were diagnosed (median follow-up=12.6y). Dietary iron intakes were assessed using repeated 24h dietary records. Associations were characterized by multivariate Cox proportional hazards models.

Results:
Dietary iron intake was associated with an increased breast cancer risk ($HR_{T3vs.T1}$=1.67 (1.02-2.71), P-trend=0.04). This association was more specifically observed in the placebo group of the SU.VI.MAX trial ($HR_{T3vs.T1}$=2.80 (1.42-5.54), P-trend=0.003), but not in the antioxidant-supplemented group (P-trend=0.7, P-interaction=0.1). Besides, in the placebo group, increased breast cancer risk associated with iron intake tended to be more specifically observed in women with higher lipid intake ($HR_{T3vs.T1}$=2.57 (0.86-7.69), P-trend=0.046).

Conclusions:
In this prospective study, dietary iron intake was associated with an increased breast cancer risk. This association was modified by an antioxidant supplementation and by lipid intake. Dietary iron intake was associated with breast cancer risk in the women not supplemented with antioxidants and in women with higher lipid intakes. These epidemiological findings support the experimental results suggesting that heme iron may increase breast cancer risk through lipid peroxidation.

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