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## **B-067 - Weight Status And Alcohol Intake Modify The Association Between Vitamin D And Breast Cancer Risk**

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### **Purpose:**

Mechanistic hypotheses suggest that vitamin D may contribute to the prevention of breast cancer. However, epidemiologic evidence is inconsistent, suggesting a potential effect modification by individual factors. Our objective was to investigate the prospective associations between the plasma 25-hydroxyvitamin D (25(OH)D) concentration, polymorphisms of genes encoding for the vitamin D receptor (VDR), and the vitamin D-binding protein (GC), and breast cancer risk, along with 2 potential modifiers: BMI and alcohol intake.

### **Methods:**

A nested case-control study was set up in the Supplémentation en Vitamines et Minéraux Antioxydants (SU.VI.MAX) cohort (1994–2007), involving 233 women with breast cancer and 466 matched controls. The plasma total 25(OH)D concentration and gene polymorphisms were assessed on samples obtained at baseline. Conditional logistic regression models were computed.

### **Results:**

A higher plasma 25(OH)D concentration was associated with a decreased risk of breast cancer for women with a BMI<sub>Q4vs.Q1</sub>=0.46 (0.23-0.89); P-trend=0.01, P-interaction=0.002), whereas it was associated with an increased risk in women with a BMI ≥median (OR<sub>Q4vs.Q1</sub>=2.45 (1.13-5.28); P-trend=0.02, P-interaction=0.002). A plasma 25(OH)D concentration ≥10ng/mL was associated with a decreased risk of breast cancer for women with alcohol intakes ≥median (OR<sub>≥10vs.<10ng/mL</sub>=0.50 (0.26-0.95); P=0.03, P-interaction=0.03). The genetic analyses were consistent with the results observed with plasma 25(OH)D.

### **Conclusions:**

In this prospective study, plasma 25(OH)D was associated with a decreased breast cancer risk in lean women, whereas it was associated with an increased risk in women with a higher BMI. Plasma 25(OH)D was also associated with a decreased breast cancer risk in women with moderate-to-high alcohol consumption, whereas no association was observed among women with low alcohol intake. These effect modifications suggest explanations for discrepancies in results of previous studies.

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