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“Intake of the total, classes, and subclasses of (poly)phenols and breast cancer risk: a prospective analysis of the EPIC study”

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ABBREVIATIONS

BC = Breast Cancer

CI = Confidence Interval

EPIC = European Prospective Investigation into Cancer and Nutrition

ER= Estrogen Receptor

HER2= Human epidermal growth factor 2

HR= Hazard Ratio

HRT = Hormone Replacement Therapy

PR= Progesterone Receptor

ROS = Reactive Oxygen Species

SUMMARY

(Poly)phenols are a large class of plant-derived compounds classified into flavonoids, phenolic acids, lignans, and stilbenes, each one varying in bioavailability and chemical structures. They can decrease the risk of developing diseases through antioxidant enzyme enhancement and inflammation mitigation. Breast cancer (BC) is the most common cancer in women, and its incidence is increasing, particularly in high-income countries. Epidemiological studies suggest that diets rich in (poly)phenols, such as the Mediterranean diet, are linked to a lower risk of BC. This study hypothesizes that higher intake of total (poly)phenols, along with their specific classes and subclasses, is associated with a reduced risk of overall BC and its main clinical subtypes. This study aims to examine these associations in a large European population, the European Prospective Investigation into Cancer and Nutrition (EPIC) cohort study, which includes 257,961 women from several European countries. Data on diet and lifestyle were collected at baseline using validated questionnaires. BC incidence was mainly ascertained from population cancer registries; information on hormone receptor status was also included. (Poly)phenol intake was calculated and categorized into quintiles. Cox regression models estimated the associations between (poly)phenol intake and overall BC risk and its main subtypes, considering various confounders like age, BMI, menopausal status, and lifestyle factors. Statistical analyses were performed using R and RStudio. Overall, there is no significant association between either total, or any classes and subclasses of (poly)phenol intake and overall BC risk, and across different BC subtypes, and by menopausal status. In conclusion, the study did not support any associations between the intake of any type of (poly)phenols and the risk of BC or its main subtypes in a large, multi-center European cohort.