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The relative effects of food and food supplement on plasma vitamin E levels in a healthy adult Irish population

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Results of National Adult Nutrition Survey show that 28% of Irish adults are regular consumers of food supplements[(1)]. Previous work has shown that plasma folic acid is significantly influenced by the intake of synthetic folic acid from supplements and fortified foods[(2)], however the effect of wider supplement use and food fortification consumption on circulating plasma levels of other nutrients is relatively unknown.

The present study set out to explore the role of dietary supplement use in the determination of plasma vitamin E levels in an Irish adult population. Participants (n = 1129) provided a 4-day semi-weighed food diary and a blood sample as a part of the National Adult Nutrition Survey[(1)]. Vitamin E intake from both food and supplement use was ascertained, and the main food groups contributing to intake determined. It must be noted that currently data within the Irish National Food Ingredient Database (INFID) showed no food to be fortified with vitamin E and thus only supplement use was considered. Participants were categorised into four consumption groups based on their source and intake level of vitamin E intake (none, low, medium and high vitamin E supplement users). α-Tocopherol plasma levels were determined by HPLC[(3)]. Differences in plasma α-tocopherol concentration between supplement users and non-supplement users were explored with means and one-way ANOVA using SPSS version 20.0 (IBM Inc. Chicago, USA).

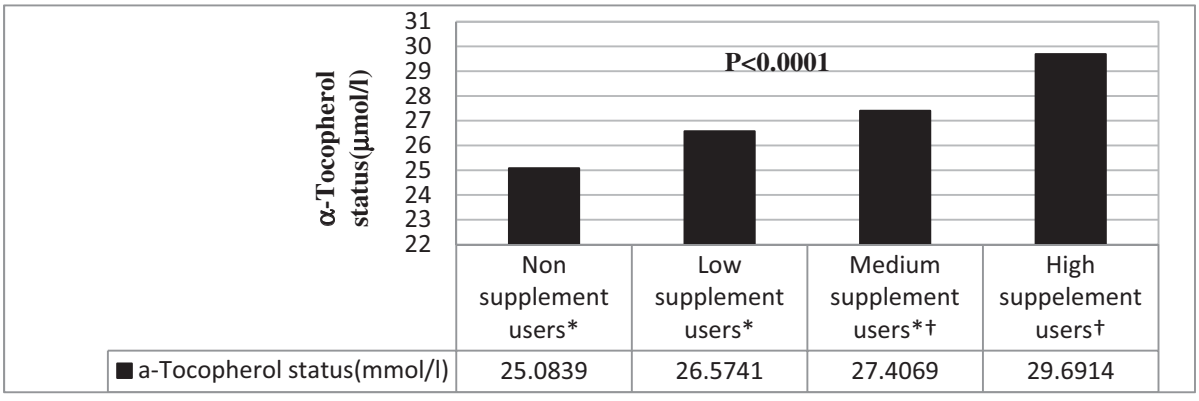

Fig. 1. Plasma α-tocopherol concentration across non-supplement users and supplement users of different levels.

At a total population level, the average intake of vitamin E was 15.7 mg/day (range 1.60–851.28 mg/day), with the main food groups contributing to total intake being nutritional supplements (39.86%), butter, spreading, fats and oil (9.44%) and vegetables and vegetable dishes(6.82%) (Data was not shown). Results indicate that plasma α-tocopherol level and vitamin E intake were significantly higher in vitamin E supplement users compared to non-users, with significant differences in circulating α-tocopherol levels across supplement user groups (Fig.1). Future work will focus on determining the proportions of different supplement contributing to vitamin E intake, such as fish oil, multivitamins and so on.

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