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### Abstracts

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p<0.001) or borderline (EGRAC >1.2-<1.4) riboflavin status (5.73[1.02], p<0.01). MLRA showed that tHcy was 18% higher in MTHFR 677C>T homozygotes in the highest EGRAC tertile >1.17) at <12GW compared to the reference group (heterozygotes and wild types combined) and 18.8% higher at 34GW (high EGRAC tertile: > 1.22). The respective interaction terms (EGRAC \* MTHFR 677C>T genotype) were significant: p=0.002 and p<0.001.

**Conclusion:** Riboflavin status worsened as pregnancy progressed, was inversely associated with tHcy in mid-late pregnancy and determined the effect of the MTHFR 677C>T polymorphism on tHcy.

**Key words:** Riboflavin, homocysteine, MTHFR 677C>T, pregnancy.

## O104

### AN INADEQUATE FRUIT AND VEGETABLE INTAKE HAS ONLY A SMALL EFFECT ON VITAMIN STATUS IN EUROPEAN ADOLESCENTS- THE HELENA STUDY

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**Background and objectives:** Fruit and vegetables intake is recommended as high intakes are associated with a reduced outcome of chronic disease and positive health status. Especially adolescents often have an inadequate intake of fruit and vegetables, and this could be linked to an undersupply of nutrients, and specifically, vitamins. The association between fruit and vegetable consumption (FVC) and vitamin status in European adolescents participating in the HELENA (Healthy Lifestyle in Europe by Nutrition in Adolescence) cross-sectional study is examined.

**Methods:** In 1089 adolescents (580 females), FVC were assessed by means of a validated questionnaire and blood vitamin concentrations [plasma folate (PF), red blood cell folate (RBC folate), whole blood folate (WBF), cobalamin, holotranscobalamin, total-homocystein, vitamin B6, vitamin C,  $\beta$ -carotene,  $\alpha$ -tocopherol, retinol, and 25-OH-vitamin D]. The fruit and vegetable intake was classified into 3 groups: A: intake less or equal to once a week; B: 2-6 times per week, C: at least once per day. Vitamin status was assessed by chromatography (RP-HPLC) or immunoassays. Statistical differences were assessed by ANOVA analysis (p<0.05, SPSS).

**Results:** Group C with regular fruit and vegetable consumption included the lowest percentage of adolescents (for fruits: boys = 14.6%, girls 21.4%, for vegetables: boys =10.3%, girls = 16.5%). In both gender, significantly higher PF levels were observed with higher FVC. In boys, FVC was positively correlated to WPF and RBC-folate (p<0.05). Only in girls, a higher vegetable intake was also associated with significantly higher cobalamin, vitamin C and  $\beta$ -carotene levels. Fruit intake in boys was inversely associated with  $\alpha$ -tocopherol concentrations (p<0.05).

**Conclusions:** Less than 20% of adolescents consumed fruit and vegetables at least once per day. Only folate was positively influenced by FVC and in addition in girls, cobalamin, vitamin C, and  $\beta$ -carotene concentrations were related to vegetable intake.

**Key words:** vitamin status, fruit and vegetable intake, adolescents