Intake, status and dietary sources of riboflavin in a representative sample of Irish adults aged 18-90 years

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Introduction

- Riboflavin is a water soluble B-vitamin.
- In its coenzymatic forms: Flavin mononucleotide (FMN) and flavin adenine dinucleotide (FAD) it is required for numerous oxidation/reduction reactions.
- Plays an integral role in the metabolism of other B-vitamins and the related metabolite homocysteine.

Objective

To estimate the usual intake, prevalence of inadequate intakes, biochemical status and dietary sources of riboflavin in Irish adults using data from the National Adult Nutrition Survey (2008-2010).

Methods

- Food consumption data are based on the National Adult Nutrition Survey (2008 – 2010) (www.iuna.net)
 - 1500 adults aged 18 to 90 years
 - 4-day semi-weighed food diary
- Dietary intake data were analysed using WISP[®] based on UK⁽¹⁾ food composition tables updated with Irish⁽²⁾ data.
- Blood samples (n 1126) were collected by a qualified nurse and transported to the lab for processing and analysis.
- Usual intakes were calculated via the NCI-method⁽³⁾ using SAS Enterprise Guide.
- The Estimated Average Requirement (EAR) of 1.3mg/d established by EFSA⁽⁴⁾ was used as a cut-off to assess the prevalence of inadequate intakes.
- Riboflavin status was determined by erythrocyte glutathione reductase activation coefficient (EGRac), calculated as the ratio of flavin-dependent glutathione reductase activity before and after *in vitro* reactivation with its prosthetic group FAD, with a cut-off value of >1.3 generally used to indicate low/deficient status⁽⁵⁾.

Results

Proportion of the population with riboflavin intakes below the EAR (1.3mg/d⁽⁴⁾)

Proportion of the population with EGRAC > 1.3⁽⁵⁾

Contribution (%) of food groups to intakes of riboflavin

Conclusions

- **A significant proportion of Irish adults have low dietary intakes of riboflavin:**
 - 18% (10-26% range across ages)
- **Even higher proportions have evidence of deficient/low biomarker status:**
 - 61% (51-70% range across ages)
- The functional significance of an EGRac value >1.3 is unclear and requires further research.

References

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