Is there a relationship between whole grain intake and biomarkers of nutritional status?

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Previously, consumption of wholegrain foods has been related to a more nutrient dense diet in Irish adults(1). This analysis investigated any associations between eating wholegrain foods and biomarkers of nutritional status using data from the National Adult Nutrition Survey (2008–2010) (www.iuna.net)(2). A 4-day semi-weighed food diary recorded food intake data of 1500 adults and wholegrain intake was identified at food and brand level(1). Markers of nutritional status were measured by ELISA (serum 25 (OH) vitamin D), microbiological assay (red blood cell (RBC) and serum folate), fluorescence polarization immunoassay (plasma homocysteine; Hcy), HPLC (plasma pyridoxal-5′-phosphate; PLP, vitamin B6), erythrocyte glutathione reductase activation coefficient (EGRAC; riboflavin), Beckman Coulter Counter (Haemoglobin; Hb) or a RX Daytona automated analyser (serum ferritin, Total Iron Binding Capacity; TIBC). After the exclusion of under-reporters, non-consumers of wholegrain were identified and tertiles of intake calculated for consumers.

Higher dietary wholegrain intakes were associated with improvements in B-vitamin and homocysteine status but not in biomarkers of iron or vitamin D intake. Across the consumption groups, there were no changes (P > 0.05) in dietary intakes (mg or μg/10MJ/day) of iron, vitamin D or of any of the B vitamins studied. Although correlations were weak, dietary intakes of wholegrain containing breads, ready to eat breakfast cereals and cooked breakfast cereals were more strongly (P < 0.05) related with B-vitamin and homocysteine status than other wholegrain containing foods. Further research will identify whether benefits of eating wholegrain containing foods exist beyond B-vitamin status.

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