

NUTRITION

Whole grain intake and diabetes risk: is benefit affected by genotype?

Whole grain consumption has a favorable effect on fasting concentrations of glucose and insulin that is unaffected by genetic variation at loci that influence glucose and insulin levels, report Nettleton *et al.*

The researchers investigated the gene–diet interactions in a 14-cohort meta-analysis that included data of ~48,000 individuals of European descent who did not have type 2 diabetes mellitus when fasting levels of glucose and insulin were measured; participants' genotype at 16 glucose-related single nucleotide polymorphisms (SNPs) and two insulin-related SNPs was also determined.

The researchers found a strong inverse association between the amount of whole grain intake and fasting glucose or insulin levels, which persisted after adjustment for a number of potential confounders, including sex, age, energy intake and BMI. The inverse association held true regardless of allelic variation at most of the loci tested; however, presence of

the insulin-raising C allele in the SNP located in the glucokinase (hexokinase 4) regulator (*GCKR*) gene seemed to dampen the beneficial insulin-lowering effect of greater whole grain intake.

Could dietary therapy be individualized to a patients' genotype? The researchers hope to find out with further studies of gene–diet interactions. “Obvious next steps would be to expand our focus from just a few SNPs to the multitude available in genome-wide association studies. We are also interested in the possible interaction we noted between *GCKR* and whole grain intake”, concludes lead researcher Jennifer Nettleton of the University of Texas.

Carol Wilson

Original article Nettleton, J. A. *et al.* Interactions of dietary whole grain intake with fasting glucose- and insulin-related genetic loci in individuals of European descent: a meta-analysis of 14 cohort studies. *Diabetes Care* doi:10.2337/dc10-1150