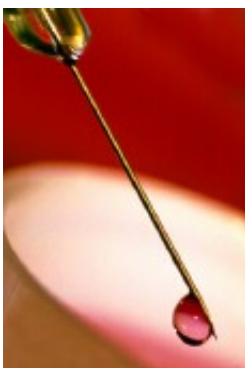


# Amino acid levels linked to type 2 diabetes risk

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(HealthDay) -- Levels of some amino acids are associated with glycemia and insulin resistance and predict the development of type 2 diabetes in men, according to a study published online May 2 in *Diabetes*.

Alena Stancakova, M.D., Ph.D., from the University of Eastern Finland in Kuopio, and colleagues examined the association between glycemia, 43 single [nucleotide polymorphisms](#) associated with hyperglycemia or type 2 diabetes, and levels of eight amino acids in 9,369 Finnish men either without diabetes or with newly-diagnosed type 2 diabetes.

After 4.7 years, the researchers found that alanine, leucine, isoleucine, tyrosine, and glutamine levels predicted incident type 2 diabetes, which was largely mediated by [insulin resistance](#) with the exception of

glutamine. Increased glycemia (increased fasting and two hour [plasma glucose levels](#)) was associated with higher levels of branched-chain, aromatic amino acids and alanine and lower levels of histidine and glutamine. [Insulin sensitivity](#) was associated with expression of genes regulating amino acid degradation in adipose tissue. One risk allele, a variant of *GCKR*, was significantly correlated with lower levels of alanine and isoleucine and higher levels of glutamine.

"In conclusion, the levels of branched-chain, aromatic amino acids and alanine increased and the levels of glutamine and histidine decreased with increasing glycemia, reflecting, at least in part, insulin resistance," Stancakova and colleagues write. "Only one single nucleotide polymorphism regulating hyperglycemia was significantly associated with amino acid levels."

**More information:** [Abstract](#)  
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