

### Amino Acid Intake and Conformance with the Dietary Reference Intakes in the United States: Analysis of the National Health and Nutrition Examination Survey, 2001–2018

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**Objectives:** The lack of complete amino acid composition data in food composition databases has made determining population-wide amino acid intake difficult. This cross-sectional study characterizes habitual intakes of each amino acid and adherence to dietary requirements for each essential amino acid (EAA) by age, gender, and race/ethnicity in the US population.

**Methods:** Food and Nutrient Database for Dietary Studies ingredient codes with missing amino acid composition data were matched to similar ingredients with available data, so that amino acid composition could be determined for virtually 100% of foods reported in What We Eat in America, the dietary intake assessment component of NHANES. Amino acid intakes during 2-y cycles of NHANES 2001–2018 ( $n = 84,629$ ;  $\geq 2$  y) were calculated as relative [mg/kg of ideal body weight (IBW)/d] and absolute (g/d) intakes. Data from NHANES

2011–2018 were used to determine the percentage of the population consuming less than the Dietary Reference Intakes for each EAA by age, sex, and race/ethnicity.

**Results:** Relative intakes of EAAs were greatest in those 2–3 y (females:  $1552 \pm 9$  and males:  $1659 \pm 9$  mg/kg IBW/d) and lowest in those  $\geq 80$  y (females:  $446 \pm 2$  and males:  $461 \pm 3$  mg/kg IBW/d). Absolute intakes of EAAs were greatest in those 31–50 y (females:  $31.4 \pm 0.1$  and males:  $45.5 \pm 0.1$  g/d) and lowest in those 2–3 y (females:  $22.4 \pm 0.1$  and males:  $26.0 \pm 0.1$  g/d). In individuals 2–18 y and  $\geq 19$  y, relative intakes of EAAs were lowest in the NHB population ( $860 \pm 16$  and  $505 \pm 5$  mg/kg IBW/d, respectively) and highest in the Asian population ( $994 \pm 35$  and  $580 \pm 7$  mg/kg IBW/d, respectively). Less than 1% of individuals  $\geq 19$  y were not meeting the Estimated Average Requirements for each EAA.

**Conclusions:** Individual amino acid intakes in the US population exceed recommended minimum population requirements. Future studies can use the method described here to quantify habitual amino acid intake and examine relationships with health and disease.

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