Characterizing Flavonoid Intake of Children in the U.S.: Results From What We Eat in America, NHANES 2017–2018

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Objectives: Flavonoids, bioactive compounds found in plants, exhibit multiple actions that may protect against chronic disease. While flavonoid intakes by adults have been reported, little is known concerning current intakes by children. The objective of this study is to estimate intake of flavonoids and identify top dietary sources among U.S. children.

Methods: One day of dietary intake from children 2–19 years ($n = 2{,}380$) participating in What We Eat in America, NHANES 2017–2018 was analyzed. USDA's Database of Flavonoid Values for USDA Food Codes 2007–2010 was updated to reflect all foods/beverages reported in 2017–2018. The resulting database provides flavonoid composition profiles (total flavonoids and 29 individual flavonoids in six flavonoid classes) for 7,083 foods. The What We Eat in America Food Categories were applied to amalgamate similar items in order to summarize dietary contributors to flavonoid intake.

Results: Estimated mean total flavonoid intakes were 79.9 mg/day among children 2–19 years; corresponding intakes by age group were 71.3 mg/d for 2–5 years, 73.2 mg/d for 6–11 years, and 88.9 mg/d for 12–19 years. Among all children, daily intakes of the flavonoid classes were as follows: flavan-3-ols, 47.2 mg; flavanones, 11.5 mg; anthocyanidins, 10.6 mg; flavanols, 8.8 mg; isoflavones, 1.3 mg, and flavones, 0.5 mg. Median intake estimates reflected the positive skew of the flavonoid dietary data. For all children, total intake at the 50th percentile was 34.8 mg/day, and ranged from 30.4 to 41.4 mg/day among the age groups. Though tea was only reported by 15.0% of this population, it contributed 46.3% of total flavonoid intake among children overall and $\geq$33.1% for all three age groups. Other major contributors to total flavonoid intake for all children were 100% fruit juices (11.6%), berries (7.0%), apples (6.2%), oranges (5.8%) and snacks and sweets (4.5%).

Conclusions: Assessing flavonoid intake and its dietary sources in children provides important context when investigating associations between these dietary compounds and diseases which develop over the life cycle.

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