

Relation of isoflavones and fiber intake in childhood to the timing of puberty

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Objective: It has been suggested that phytoestrogen and dietary fiber can affect in puberty timing. We examined whether isoflavone and fiber intake of healthy Caucasian children prior to the pubertal growth spurt (age at take-off, ATO) were associated with puberty timing.

Methods: Multivariate regression analyses were performed in 227 DONALD participants with weighed 3-day dietary records and information on potential confounders at baseline (one and two years prior to ATO). Dietary isoflavones were estimated for each isoflavone containing food using the VENUS database. In a subsample (n=111) urinary isoflavones were determined in 24h urine samples by GC-MS analysis. The timing of puberty was examined using the chronological age at ATO, Tanner stage 2 for breast (girls)/genital (boys) development (B2/G2), peak height velocity (APHV), and menarche/voice break (M/VB).

Results: Children with the highest dietary isoflavone intake entered puberty approximately 0.4 years later and reached PHV approximately 0.4 years later than children with the lowest dietary isoflavone intake. ATO in the lowest and highest total dietary isoflavone quintiles were 9.2 (95% CI 8.9–9.5) years and 9.6 (9.3–9.9) years, p for trend=0.04; APHV was 12.3 (12.0–12.5) years and 12.7 (12.4–12.9) years, p for trend=0.04; adjusted for sex, maternal overweight and fiber intake, respectively. These associations were attributable to isoflavones from soy (p for trend=0.04 and p for trend=0.02, respectively). Dietary isoflavones were not related to age at B2/G2 or M/VB. Urinary isoflavones and dietary fiber intakes (total fiber, cereal fiber, fruit fiber or vegetable fiber) were not associated with pubertal markers.

Conclusion: Children with higher pre-pubertal isoflavone intakes appear to enter puberty at a later age. However, fiber intakes in this sample of healthy Caucasian children was not relevant for puberty timing.

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