

## ANIMAL PROTEIN INTAKE, SERUM INSULIN-LIKE GROWTH FACTOR I, AND GROWTH IN HEALTHY 2.5-Y-OLD DANISH CHILDREN

Hoppe C., Udam, T.R., Lauritzen, L., Mølgaard, C., Juul, A. and Michaelsen, K.F.  
*Animal protein intake, serum insulin-like growth factor I, and growth in healthy 2.5-y-old Danish children.*

American Journal of Clinical Nutrition. 2004 Aug; 80(2): 447-52.

### ABSTRACT

**BACKGROUND:** Studies from developing countries indicate that intake of animal protein, especially of milk, is associated with greater velocity of linear growth in childhood. Whether the same association exists in industrialized countries, where protein intake is high, is not clear.

**OBJECTIVE:** Our objective was to examine associations between protein intake, serum insulin-like growth factor I (sIGF-I) concentrations, and height in healthy children.

**DESIGN:** We analyzed the associations between protein intake, sIGF-I concentrations, and height in 2.5-y-old children. Diet (7-d record) and sIGF-I (radioimmunoassay) data were available from 90 children (54 boys).

**RESULTS:** The 10th, 50th, and 90th percentiles of protein intake were 2.4, 2.9, and 4.0 g. kg(-1). d(-1), respectively; 63% was animal protein. In multiple linear regressions with adjustment for sex and weight, height (cm) was positively associated with intakes of animal protein (g/d) [0.10 +/- 0.038 (b +/- SE); P = 0.01] and milk (0.0047 +/- 0.002; P = 0.007), but not with those of vegetable protein or meat. The sIGF-I concentration was significantly associated with intakes of animal protein (1.4 +/- 0.53; P = 0.01) and milk (0.049 +/- 0.024; P = 0.045), but not with those of vegetable protein or meat. sIGF-I concentrations were positively associated with height (0.019 +/- 0.008; P = 0.02).

**CONCLUSION:** Milk intake was positively associated with sIGF-I concentrations and height. An increase in milk intake from 200 to 600 mL/d corresponded to a 30% increase in circulating IGF-I. This suggests that milk compounds have a stimulating effect on sIGF-I concentrations and, thereby, on growth.