



Association between macronutrients and fibre with circulating Insulin-Like Growth Factor-I in the UK Biobank

C.Z. Watling¹, R.K. Kelly¹, T.Y.N. Tong¹, G. Fensom¹, C. Piernas², E.L. Watts¹, S. Tin Tin¹, A. Knuppel¹, J. Schmidt¹, R.C. Travis¹, T.J. Key¹ and A. Perez-Cornago¹

¹Cancer Epidemiology Unit, Nuffield Department of Population Health, University of Oxford. Oxford, United Kingdom
and

²Nuffield Department of Primary Care, University of Oxford. Oxford, United Kingdom

Circulating Insulin-Like Growth Factor I (IGF-I) has been associated with higher risk of several common types of cancer, such as prostate, breast, and colorectal cancer⁽¹⁾, and dietary intake has been suggested to influence IGF-I concentrations⁽²⁾. However, previous observational studies investigating the association of nutrients with circulating IGF-I have been limited by small sample sizes. We assessed the association of macronutrients and fibre intake with circulating IGF-I concentrations in an observational analysis in the UK Biobank; a large cohort of British adults.

In this analysis, participants were selected if they completed at least four (maximum of five) web-based 24-hour dietary assessments³ and had serum IGF-I measured (n = 12,000). Usual macronutrient and fibre intakes were determined by the mean of completed 24-hour dietary assessments. Multivariable linear regression was used to assess the associations of these dietary factors with circulating IGF-I. Sensitivity analyses were conducted in participants who had a second blood sample five years after recruitment, using the mean of the two IGF-I measurements (n = 2,581).

The mean circulating IGF-I concentration was 21.96 nmol/L. Consumption of 2.5% higher energy intake from total protein, dairy protein, milk protein, and yogurt protein were associated with 0.57 (95% confidence interval (CI): 0.47–0.66), 0.71 (95% CI:0.50–0.92), 1.17 (95% CI:0.87–1.48), and 1.33 (95% CI:0.80–1.85) nmol/L higher circulating concentrations of IGF-I respectively, whereas cheese protein was not associated with IGF-I concentration. A 5 gram/day higher intake of fibre was associated with 0.46 (95% CI:0.35–0.57) nmol/L higher concentration of IGF-I. When analyses were restricted to participants with two blood samples, results remained largely the same, with milk protein being most strongly associated with the average measurements of IGF-I concentration. Carbohydrates and fats were not materially associated with IGF-I concentrations.

We found that dairy protein was the macronutrient most strongly associated with circulating IGF-I concentrations. However, this association varied by dairy protein source, with the strongest association being for milk and yogurt protein. Moreover, dietary fibre intake was also positively associated with IGF-I, which warrants further investigation.

1. Pollak M (2012) *Nat Rev Cancer* **12**, 3, 159-169.

2. Crowe FL, Key TJ, Allen NE *et al.* (2009) *Cancer Epidemiol Biomarkers and Prev*, **18**, 3, 1333–1440.

3. Liu B, Young H, Crowe FL, *et al.* (2011) *Public Health Nutr* **14**, 11, 1998-2005.