[Clin Nutr.](https://www.ncbi.nlm.nih.gov/pubmed/19185957" \o "Clinical nutrition (Edinburgh, Scotland).) 2009 Apr;28(2):147-55. doi: 10.1016/j.clnu.2008.12.003. Epub 2009 Jan 31.

**A breakfast with alpha-lactalbumin, gelatin, or gelatin + TRP lowers energy intake at lunch compared with a breakfast with casein, soy, whey, or whey-GMP.**

[Veldhorst MA](https://www.ncbi.nlm.nih.gov/pubmed/?term=Veldhorst%20MA%5BAuthor%5D&cauthor=true&cauthor_uid=19185957)1, [Nieuwenhuizen AG](https://www.ncbi.nlm.nih.gov/pubmed/?term=Nieuwenhuizen%20AG%5BAuthor%5D&cauthor=true&cauthor_uid=19185957), [Hochstenbach-Waelen A](https://www.ncbi.nlm.nih.gov/pubmed/?term=Hochstenbach-Waelen%20A%5BAuthor%5D&cauthor=true&cauthor_uid=19185957), [Westerterp KR](https://www.ncbi.nlm.nih.gov/pubmed/?term=Westerterp%20KR%5BAuthor%5D&cauthor=true&cauthor_uid=19185957), [Engelen MP](https://www.ncbi.nlm.nih.gov/pubmed/?term=Engelen%20MP%5BAuthor%5D&cauthor=true&cauthor_uid=19185957), [Brummer RJ](https://www.ncbi.nlm.nih.gov/pubmed/?term=Brummer%20RJ%5BAuthor%5D&cauthor=true&cauthor_uid=19185957), [Deutz NE](https://www.ncbi.nlm.nih.gov/pubmed/?term=Deutz%20NE%5BAuthor%5D&cauthor=true&cauthor_uid=19185957), [Westerterp-Plantenga MS](https://www.ncbi.nlm.nih.gov/pubmed/?term=Westerterp-Plantenga%20MS%5BAuthor%5D&cauthor=true&cauthor_uid=19185957).

**Abstract**

**BACKGROUND & AIMS:**

Dietary protein plays a role in body weight regulation, partly due to its effects on satiety. The objective was to compare the effects of casein-, soy-, whey-, whey without glycomacropeptide (GMP)-, alpha-lactalbumin-, gelatin-, or gelatin with tryptophan (TRP)-protein breakfasts at two concentrations on subsequent satiety and energy intake (EI).

**METHODS:**

Twenty-four healthy subjects (mean+/-SEM BMI: 24.8+/-0.5 kg/m(2); age: 25+/-2 years) received a breakfast; a custard with casein, soy, whey, whey-GMP, alpha-lactalbumin, gelatin, or gelatin+TRP as protein source with either 10/55/35 (normal) or 25/55/20 (high) En% protein/carbohydrate/fat in a randomized, single-blind design. At the precedingly determined time point for lunch, 180 min, subjects were offered an ad lib lunch. Appetite profile (Visual Analogue Scales, VAS) and EI were determined.

**RESULTS:**

Both at the level of 10 and 25 En% from protein, EI at lunch was approximately 20% lower after an alpha-lactalbumin or gelatin (+TRP) breakfast (2.5+/-0.2 MJ) compared with after a casein, soy, or whey-GMP breakfast (3.2+/-0.3 MJ, p<0.05). Appetite ratings at 180 min differed 15-25 mm (approximately 40%, p<0.05) between types of protein. Differences in EI were a function of differences in appetite ratings (R(2)=0.4, p<0.001).

**CONCLUSIONS:**

Different proteins (alpha-lactalbumin, gelatin, gelatin+TRP) that are approximately 40% more satiating than other proteins (casein, soy, whey, whey-GMP) induce a related approximately 20% reduction of subsequent energy intake.