

Superior Health Council

Belgian dietary reference values: Protein

Theo Niewold
KU Leuven



Background

Proteins are essential nutrients

Polymers of amino acids (AA)

There are 20 AA of which 9 can not be synthesized by the body, and are essential AA



Background

AA are precursors of proteins and a whole host of compounds such as hormones, DNA, RNA etc.

Excess protein (above requirement) is used for the production of energy, glucose, fat.



Requirement

Dependent on need: growth, pregnancy
lactation, sex, activity

**Inactivity leads to sarcopenia (the elderly) in the
presence of sufficient intake**

Dependent on: other nutrients

**Low carbohydrate leads to AA-catabolism for
glucose**



Requirement

Dependent on: Quality of dietary protein, or
biological value

The lower the quality, the more one needs



Quality

Dependent on: digestibility and essential AA

Limiting AA

Protein Digestibility-Corrected Amino Acid Score
(PDCAAS) (FAO/WHO)



Example

Protein (source)	PDCAAS-value in %
Egg	100
Casein	100
Bovine	92
Soy	91
Wheat	42
Legumes	31 - 58



Recommended Daily Intake

Based on human studies

Average minimum 0.66 g/kg body weight + safety margin equals 0.83 g/kg BW average adult (endurance sport 1.2 g/kg BW)

Recommended 15 en%, safe upper limit 25 en% for adults

Up to 24 months limit to 8-12 en%, risk for obesitas in later life

Average in Belgium sufficient, Median male 140, female 95 g/d



Milk protein requirement

Newborn: 1.31 g/kg BW, tapering off with increasing age

Formula composition: European guide line 2006/141/EG

Important: conditional AA, in premature cysteine from methionine insufficient



Milk replacers

Soy, requires Met supplementation

Drinks from almond etc NOT suitable as sole protein source



Main sources in Belgium

(Food Consumption Survey 2014-2015)

34.1% meat (products), meat replacers

21.4% grains (products)

19.0% milk (products), replacers

6.3% fish, shell fish etc.



Source and health effects

E.g. plant vs animal

No or (very) weak association in large studies

Health Professionals Follow-up Study (Preis et al., 2010)

Reason confounders, and very different in other components than protein alone

Implications for Food based dietary guidelines



Future

Methods: recommendations FAO 2013:

PDCAAS will be replaced by Digestible Indispensable Amino Acid Score (DIAAS)

Will give lower values for plant protein

Preferred animal model pig first, than rat

Influence other nutrients, CHO, fats, and non-nutrients such as lectins, phytates, inhibitors etc, rather than AA composition alone



Conclusion

Protein intake in Belgium is sufficient in both quality and amount,
and on average exceeds recommendation



**Thank You
for Your Attention**

