Health effects of protein intake in healthy elderly populations: a systematic literature review

The purpose of this systematic review is to assess the evidence behind the dietary requirement of protein and to assess the health effects of varying protein intake in healthy elderly persons in order to evaluate the evidence for an optimal protein intake. The literature search covered year 2000-2011. Prospective cohort, case-control, and intervention studies of a general healthy population in settings similar to the Nordic countries with protein intake from food-based sources were included. Out of a total of 301 abstracts, 152 full papers were identified as potentially relevant. After careful scrutiny, 23 papers were quality graded as A (highest, n = 1), B (n = 18), or C (n = 4). The grade of evidence was classified as convincing, probable, suggestive, or inconclusive. The evidence is assessed as: probable for an estimated average requirement (EAR) of 0.66 g good-quality protein/kg body weight (BW)/day based on nitrogen balance (N-balance) studies and the subsequent recommended dietary allowance (RDA) of 0.83 g good-quality protein/kg BW/day representing the minimum dietary protein needs of virtually all healthy elderly persons. Regarding the optimal level of protein related to functional outcomes like maintenance of bone mass, muscle mass, and strength, as well as for morbidity and mortality, the evidence is ranging from suggestive to inconclusive. Results from particularly prospective cohort studies suggest a safe intake of up to at least 1.2-1.5 g protein/kg BW/day or approximately 15-20 E%. Overall, many of the included prospective cohort studies were difficult to fully evaluate since results mainly were obtained by food frequency questionnaires that were flawed by underreported intakes, although some studies were 'calibrated' to correct for under- or over-reporting. In conclusion, the evidence is assessed as probable regarding the EAR based on N-balance studies and suggestive to inconclusive regarding an optimal protein intake higher than the estimated RDA assessed from N-balance studies, but an exact level cannot be determined. Potentially adverse effects of a protein intake exceeding 20-23 E% remain to be investigated.

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