2. Reducing loss of lean muscle mass

2.1 Whey protein concentrate may assist in the treatment of sarcopenia

Sarcopenia is the loss of muscle mass and strength with age. The aetiology of sarcopenia is still unclear but several interacting factors have been summarized by Roubenoff (2000). Firstly, there is possible involvement of the central nervous system with the loss of alpha motor neurons leading to muscle atrophy. Reduced production of anabolic hormones such as growth hormone, testosterone and estrogen with increasing age may also lead to muscle atrophy.

Catabolic cytokines involvement (as in cachexia) may also be a component of sarcopenia as there is a suggestion that aging is associated with a subclinical inflammatory state due to immune senescence and therefore the body's immune system is less able to distinguish between self and non-self. Finally, lack of physical activity is strongly associated with the development of sarcopenia although its occurrence is still seen in master athletes. Progressive resistance training is beneficial and can clearly increase muscle mass and strength. A recent review article by Paddon-Jones et al. (2008) suggested that moderately increasing daily protein intake beyond 0.8g/kg/day may enhance muscle protein anabolism and therefore reduce loss of muscle mass associated with sarcopenia.

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2.2 Dietary animal protein intake: association with muscle mass index in older women

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Aging is associated with reductions in muscle mass and strength, so-called sarcopenia, and is generally characterized using muscle mass index (MMI = FFM (kg)/height (m)2). It is believed that adequate nutrition especially regarding protein intake, can delay this progression and enhance the quality of life of elders.
OBJECTIVES: We examined whether the predominant source of protein consumed (animal or vegetal) by older women was associated with MMI.
DESIGN: Thirty-eight healthy, normal weight, sedentary women, aged between 57-75 years (mean age: 66 +/- 5 years old), and taking no medication that could influence metabolism were recruited. Body composition was measured by dual-energy X-ray absorptiometry; muscle protein content was measured by the use of creatinine excretion. Physical activity metabolism was obtained by the use of accelerometry, and indirect calorimetry. Finally, protein intake was measured with a 3-day dietary record.
RESULTS: Significant correlations were observed between MMI and body mass index, fat-free mass, muscle protein content, total protein intake, animal protein intake, fat mass, visceral fat and daily energy expenditure. However, a stepwise regression analysis showed animal protein intake to be the only independent predictor of MMI (r2=0.19; p=0.008).
CONCLUSIONS: Our results suggest that protein intake, especially from animal sources, may be associated with a better preservation of MMI. However, more research is needed to confirm our results.