

Attapon Cheepsattayakorn^{1,2*}, Ruangrong Cheepsattayakorn³ and Nutthanit Teantunyakij⁴¹10th Zonal Tuberculosis and Chest Disease Center, Chiang Mai, Thailand²Faculty of Medicine, Western University, Pathumtani, Thailand³Department of Pathology, Faculty of Medicine, Chiang Mai University, Chiang Mai, Thailand⁴The Prince Royal's College (M.6), Chiang Mai, Thailand***Correspondence authors****Attapon Cheepsattayakorn**10th Zonal Tuberculosis and Chest Disease Center
143 Sridornchai Road
Changklan
Muang
Chiang Mai, 50100
Thailand

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The involuntary loss of muscle mass, strength, and function or “sarcopenia” is one of the most prominent effects of aging process [1-3]. Approximately, muscle mass reduces 3-8 % per 10 years after the age of 30 and this rate increases after the age of 60 [4, 5]. These changes are the fundamental causes of disability in the elderly and functional dependence [6, 7]. These changes are also associated with a progressive increase in fat mass, changes in body composition, bone density decreases (osteoporosis), kyphosis, joint stiffness increases, an increased incidence of insulin resistance in the elderly, obesity, and heart disease [1, 4, 5, 8]. Impact-absorbing flooring, an example of preventive medicine trials could reduce the relative risk (RR) of injury due to fall in elderly by 59 % in a nursing home [9]. Sarcopenia or low muscle mass could be defined as age-associated lean tissue mass loss [10]. Racial and geographical differences should be included in the consideration of the prevalence of sarcopenia, in addition to the reference cut-off thresholds for calf circumference and muscle mass [11]. Sarcopenia was recently defined by using the Asian Working Group consensus algorithm, adjusted by age and gender, in combination with muscle mass, grip strength, and gait speed [12]. Low muscle strength is associated with poor physical function in older male and female persons [13]. Physical function and walking ability are correlated with hand grip strength [14, 15]. Grip strength, a simple and inexpensive test is positively associated with nutritional health measurement [16] and can predict future falls and fractures in the elderly [16, 17].

Lam *et al* reported that whey protein supplements (WPS) had significantly overall increased the level of branched-chain amino acids level by 458.57 nmol/L (CI = 179.96, 737.18; I² = 100 %; p = 0.00) and level of essential amino acids by 624.03 nmol/L (CI = 169.27, 1078.8; I² = 100 %; p = 0.00) compared to the control group, wherejbas WPS had decreased myoglobin level by 11.74 ng/ml (CI = -30.24, 6.76; I² = 79.6 %; p = 0.007) and creatinine kinase level by 47.05 U/L (CI = -129.47, 35.37; I² = 98.4 %; p = 0.000) [18]. Recently, Carlsson *et al* demonstrated their success in production of human myoglobin, a heme-protein in muscle with important functions in tissue oxygenation

and as a regulator in nitric oxide signaling from the leaves of *Nicotiana benthamiana* by transient expression using a viral vector delivered by *Agrobacterium tumefaciens*[19].

In conclusion, sarcopenia, a multifactorial factor that predispose to disability and may be prevented and treated modified lifestyle and pharmacological interventions. Plants could be a useful production for myoglobin for potential future nutritional or medical application. Whey protein supplements could be positively ergogenic in supports of myoglobin, creatinine kinase, and amino acids levels in humans.

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