

Biological Value of Protein

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The biological value of protein is dependent on many factors and is arguably related to the specific biological effect and/or tissue of interest. On the basis of the referred literature, whey may be considered to have a high biological value, which is consistent with its high rating on a variety of different scoring systems (e.g. biological value and protein digestibility-corrected amino-acid score). The high absorption rate and content of essential amino acids of whey make it especially suitable for the elderly population who typically present with an 'anabolic resistance' to dietary protein, which may be mediated partly by a greater splanchnic protein turnover that is necessary in host response, and partly by hormones and cytokines steering the inflammatory response. This includes changes in muscle metabolism producing a substrate mix suitable for the synthesis of biomass, immune cells and for the regulation of redox balance. This effect may also apply to situations of trauma and illness. However, from a standpoint of skeletal muscle, the 'anabolic resistance' of exercise may be mediated by a lack of activity independent of age, which positions physical activity as being of primary importance to improve the sensitivity of muscle to dietary protein. Moreover, exercise or other forms of substantial physical activity are required to promote protein gain and maintain and/or enhance muscle function with dietary protein enhancing these adaptations.

Although the biological value of casein and soy is slightly inferior to whey, these are still good and acceptable proteins that are generally 'made better' (from a muscle standpoint) by prior contractile activity [1]. Aside from the protein source, spreading meals of equal size and composition over the day may optimize protein utilization. A recommended daily allowance of protein of 0.8 g/kg body weight/day has been proposed in the adult population (or an estimated 0.9–1.0 g/kg ideal body weight/day) which recently has been disputed to be an underestimation and that the recommended daily allowance should be 20–30% higher. Athletes, elderly and critically ill individuals may require 1.5–2 g/kg ideal body weight/day [2, 3]. Ultimately, dietary protein is essential for optimal health and

well-being given its integral role in lean tissue remodeling and immune surveillance. Therefore, not only the absolute amount but also the quality of protein should be considered when determining the optimal nutrition for a variety of life conditions.

References

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