

Excerpt from:

“Use of Tryptophan-Fortified Hydrolyzed Collagen for Nutritional Support”

Paula S. Stuart, MMS., RD, LDN Stacey J. Bell, DSc, RD Joseph Molnar, MD, PhD, FACS

ABSTRACT. Protein is essential for the maintenance of optimal health. Without adequate amounts of amino acids, organs become dysfunctional and ultimately death can result. Protein deficiency is a common problem in both adults and children. Numerous nutritional supplements have been developed to help optimize protein intake. The purpose of this paper is to describe the use of tryptophan-fortified hydrolyzed collagen for nutritional support in malnourished patients.

KEYWORDS. Protein quality, nutritional support, protein supplement, tryptophan-fortified hydrolyzed collagen, protein requirements

Paula S. Stuart is affiliated with the Wake Forest University Baptist Medical Center, Medical Center Boulevard, Winston-Salem, NC 27157.

Stacey J. Bell, formerly: Private Consultant, Belmont, Massachusetts Presently: Research and Development, Nutritional Sciences, Ideasphere Inc. Hauppauge, NY.

Joseph Molnar is affiliated with the Associate Professor, Surgical Sciences, Department of Plastic and Reconstructive Surgery, Wake Forest University, Bowman Gray School of Medicine, Winston-Salem, NC.

Address correspondence to: Paula S. Stuart, MMS., RD, LDN, Wake Forest University Baptist Medical Center, Medical Center Boulevard, Winston-Salem, NC 27157 (Email: pastuart@wfubmc.edu).

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AN OPTIMAL PROTEIN SUPPLEMENT

When looking for a high quality nutritional product, one must consider digestibility, concentration of nutrients per volume, and ease of delivery as well as the quality of the nutrients. An optimal product would contain high quality ingredients, increased nutrients in a smaller volume, would be easily digestible, and would be easy to give to a patient by a caregiver. A tryptophan-fortified liquid hydrolyzed collagen supplement meets all of these important criteria. It is particularly beneficial to patients in long-term care facilities and hospitals suffering from PEM and PCM. Standard hydrolyzed collagen is not a perfect amino acid according to the established standards because it does not contain the amino acid tryptophan. A tryptophan-fortified liquid hydrolyzed collagen supplement is, in fact, considered a complete protein. Forms of hydrolyzed collagen have been utilized for several decades as a dietary supplement. Collagen hydrolysate has been of interest as a potential therapeutic agent in the treatment of osteoarthritis and osteoporosis (Moskowitz, 2000). Closer investigation of this product will reveal that it may indeed meet the protein requirements of a malnourished individual, containing an optimal amino acid composition, high bioavailability, and high digestibility. Tryptophan-fortified hydrolyzed collagen contains glycine, arginine, proline, and hydroxyproline which have been found to be beneficial under certain conditions (Soeters et al., 2004; Williams, Abumrad, & Barbul, 2002). In fact, 1/3 of the collagen molecule is glycine and 1/4 is proline or hydroxyproline. Since patients consume mixed diets with proteins from variety of sources, they should not have a problem meeting their complete amino acid requirements when using this product. In a study by Blackburn et al., when tryptophan-fortified hydrolyzed collagen was utilized as a sole source of exogenous protein and calories, a nitrogen balance was achieved. Notwithstanding tryptophan-

fortified hydrolyzed collagen should ideally be used as a supplemental protein and not as the sole source of calories. Because of its high nitrogen content, tryptophan-fortified hydrolyzed collagen provides high NPU, which is the ratio of amino acid converted to proteins to the ratio of amino acids supplied (Pellett & Young, 1980). Tryptophan-fortified hydrolyzed collagen contains 15 grams of protein per 30 ml serving which is a significant amount in a very small volume. A mere three to four ounces of this product per day would closely meet the RDA for protein. In addition, the product contains significant amounts of arginine, glycine, proline, and hydroxyproline which have been shown to optimize wound healing and help preserve lean body mass. Tryptophan-fortified hydrolyzed collagen is available in a liquid form, so that it will not have to be mixed to be consumed. The product is shelf stable and no refrigeration is necessary. This aspect is important in nursing homes and other healthcare facilities, where diets of modified consistency are offered on a regular basis and oral supplements often sit at the patient's bedside throughout the day. Clumping associated with powder protein supplements has been problematic in the past, especially when adding them to enteral feeds. This product can be added to enteral feeds easily, as well cold and hot beverages, and cereals. In addition, hydrolyzed protein does not contain fat, which would be beneficial for patients with malabsorption issues. Table 6 compares suggested indispensable amino acid intakes for children ages 2-5 and amino acid profile of tryptophan-fortified hydrolyzed collagen. Table 7 reveals the complete amino acid profile of tryptophan fortified hydrolyzed collagen. As one can visualize from the amino acid profile, this product contains high-nitrogen amino acids—Arginine, Glycine, Proline, and Hydroxyproline that support tissue healing and help protect lean body mass stores. In a hydrolyzed form, these amino acids are available for maximum digestion and utilization by the body.

CONCLUSION

In endemic environments for protein malnutrition such as hospitals, long-term health care facilities, and aging populations, oral supplements are beneficial for optimizing protein intake. Considering the quality of the nutrients, digestibility, concentration of nutrients per volume, and ease of delivery, a tryptophan-fortified hydrolyzed collagen is an appropriate product for use as a protein supplement. Because this product is a “complete” protein, it would be very beneficial for patients who either are not taking in enough protein in their diet or have increased protein needs due to certain diseased states, especially wounds. The fact that this product contains glycine, arginine, glutamine, and proline makes the product even more valuable, since these amino acids are thought to be beneficial for wound healing.

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Full Study can be viewed at: [URL: http://dx.doi.org/10.1080/19390210802519689](http://dx.doi.org/10.1080/19390210802519689)