A REVIEW ON THE IMPORTANCE OF PROTEIN INTAKE FOR HEALTH

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ABSTRACT

It's more critical than ever to be able to precisely define the amount and quality of protein needed to meet human nutritional requirements. For human population health and well-being, the balance between food supply and human protein needs is crucial. In order to maintain normal body composition and function throughout one's life, one must have access to enough high-quality food. Protein is a molecule that has a significant impact on human life and health. Proteins are broken into short peptides and then amino acids, which are easier to digest by the body, throughout the digestive process. Short peptides and amino acids will be absorbed fast and efficiently by the small intestine after hydrolysis, ensuring that the advantages supplied are maximized. Protein obtained from animal sources such as meat (terrestrial), poultry, fish, eggs, milk, cheese, and yogurt is considered to as a complete protein source since it contains all nine necessary amino acids required by the body. Insufficient protein intake to satisfy daily requirements leads to a negative protein balance, which causes skeletal muscular atrophy, delayed muscle growth, and functional degradation. It's vital to ingest the proper amount of protein to minimize muscle atrophy and maintain skeletal muscle mass and function. Increasing protein consumption is helpful to people of all ages. People who suffer from persistent infections or inflammation benefit from a high protein diet. Keep in mind, however, that high protein intake is linked to specific health hazards in some circumstances. The Recommended Dietary Allowance (RDA) values usually surpass the demands of the vast majority of the population. This value can be used as a guideline for each person's daily nutritional intake, and because it is higher than most people's needs, a nutrient consumption below the RDA cannot be considered insufficient.

Keyword: *amino acids, health, intake, protein, RDA*

1. INTRODUCTION

It is more important than ever to be able to define accurately the amount and quality of protein required to meet human nutritional needs, as well as to describe appropriately the protein supplied by food ingredients, whole foods, sole-source foods, and mixed diets, as the world's population grows rapidly and against the constraints of limited land, water, and food resources. The balance between food supply and human protein needs is critical for human population health and well-being [1]. Maintaining health requires access to sufficient, high-quality food to sustain normal body composition and function throughout one's life. Protein is a compound that has a major impact on human health and survival. Low or high protein intake will have an effect both in the short and long term. These macro-nutrient compounds form the main structural components of all cells of the human body and also function as enzymes, membranes, intra-cellular matrix, transport media (blood transporting molecules) and hormones. Hair, nails, serum albumin, keratin and collagen are composed of protein [2], [3]. Protein is an essential component of a healthy diet because it allows the body's dynamic system of structural and functional elements to exchange nitrogen with the environment to grow and maintain the 25,000 proteins encoded within the human genome, as well as other nitrogenous chemicals [2].

Protein is described as any of a set of complex organic substances that contain carbon, hydrogen, oxygen, nitrogen, and, in most cases, sulfur and are made up mostly of combinations of amino acids in peptide bonds. Proteins are the primary element of the protoplasm of all cells and are required for life in both plants and animals [4]. Proteins are linear hetero-polymers from a chemical standpoint. Proteins, on the other hand, can draw on a mix of twenty different monomers, unlike most synthetic polymers, which are condensed from one or a few monomer units. The bulk of proteins fold as relatively small self-contained structures, whereas polymers are frequently very big extended molecules creating a matrix (commonly cross-linked as a gel) [5]. Animal proteins, including as meat, chicken, fish, eggs, milk, cheese, and yogurt, are referred to as "complete proteins" because they include all nine essential amino acids. Proteins found in plants, legumes, grains, nuts, seeds, and vegetables are known as "incomplete proteins" because they lack one or more essential amino acids [3], [6]. Meat has changed from being 'protein rich' to being 'fat rich,' with an increase in saturates and a decrease in polyunsaturates as a result of intensive animal production. The greatest recognized risk factor for the rise in death from coronary heart disease is an increase in saturated and total fat consumption [7].

Meat from domesticated animal species including cattle (beef), pigs (pork), fowl (chicken, duck, or turkey), and sheep (sheep) are the most popular sources of animal proteins for humans (lamb). Poultry meat is becoming the most important source of animal protein for human consumption. This is most likely due to increased production efficiency in intensive farming and the cheaper cost of poultry meat compared to beef and lamb. However, according to cultural choices and religious beliefs, the use and subsequent consumption of various animal species varies around the world. Meat can be part of a well-balanced diet that provides essential elements for human health. Meat proteins (20% of a muscle's weight) are the most important components that make up the meat product's structure. Meat's nutritional value stems from its high-quality protein, which contains all of the essential amino acids, as well as its high bioavailability of minerals and vitamins. Meat contains vitamin B12 and iron, both of which are scarce in vegetarian diets. As part of a healthy and balanced diet, seafood comprises fish, crustaceans, and mollusks, which are low-fat and protein-rich sources. Seafood protein is of high quality, including all of the essential amino acids in adequate levels and in a balanced ratio. On a wet weight basis, the quantity of protein included in most fish products utilized for human consumption ranges from 15% to 20%. There are no significant differences in amino acid content between freshwater and marine fish [6]

The fundamental difference between animal and plant dietary protein sources is likely due to a combination of thick plant cell walls that restrict plant protein accessibility to digestive enzymes and anti-nutritional substances that might delay digestion. The following criteria impact the nutritional quality of any food protein: the content of essential and non-essential amino acids; the mutual proportions of certain essential amino acids, which should ideally – be identical to those found in body proteins; the energy provided, which is necessary for protein synthesis in the body; the protein's digestibility [8].

2. ESSENTIAL AND NON ESSENTIAL AMINO ACIDS

Amino acids are the building blocks of proteins and have a role as precursors (basic materials for the formation of other materials) nucleic acids and co-enzymes, hormones, vitamins and other important molecules [2], [3]. Despite the fact that the structure of the twenty different (natural) amino acids varies greatly, the variance is all confined to the side groups, leaving a constant unit that polymerises into a regular backbone chain (with one exception) [5]. It can be said that amino acids are the most important aspect in describing the characteristics of a protein. Thus, adequate supply and intake of protein from food is essential for the maintenance of cellular function and integrity, human health and reproduction. To avoid protein-energy malnutrition, both protein and nonprotein energy (from carbohydrates and fats) must be accessible. Similarly, the body's capacity to utilise protein will be harmed if amino acids are not present in the proper balance [3].

During the digestion process, proteins will be hydrolyzed into short peptides and eventually become amino acids that are more easily digested by the body. Enzymes that play a role in the process of protein digestion are called peptidases. Human peptides are found in the stomach, pancreas and small intestine. After hydrolysis, short peptides and amino acids will be absorbed quickly and efficiently by the small intestine so that the benefits provided are optimal. Protein obtained from animal sources such as meat (terrestrial), poultry, fish, eggs, milk, cheese and yogurt provides all nine essential amino acids that the body needs and is referred to as a complete protein source. While protein obtained from plant sources such as whole grains, legumes, and vegetables tends to lack one or more essential amino acids and is referred to as an incomplete protein source. If the amino acids contained in an ingredient are not balanced, this will affect the body's ability to use protein according to its function. Protein deficiency or deficiency has been known to affect all organs and systems in the body.

All amino acids are excreted by the skin (sweat and skin cells), urine, and gut (intestinal losses). Other routes for amino acid loss includes oxidation, synthesis of other amino acids, irreversible modification and synthesis of non-protein substances. Collecting ileostomy fluid from people on a protein-free diet was used to quantify intestinal losses, implying that the gut could be a primary source of amino acid loss [2]. Even if overall nitrogen intake is adequate, if the quantity of a single necessary amino acid in the diet is less than the individual's requirement, this shortfall will limit the usage of other amino acids and hence prohibit normal rates of protein synthesis. As a result, the nutritional value of the diet's total nitrogen or protein content will be determined by the "limiting amino acid" [1]. [9] defines limiting amino acid as the essential amino acid present in a protein in the smallest proportion relative to its requirement. The chemical assessment of a protein's nutritional value (protein quality) is the ratio between the amount of the limiting amino acid in the protein and the demand for that amino acid (chemical score). The sum of methionine + cysteine limits most cereal proteins, and the sum of methionine + cysteine limits most animal and other vegetable proteins (the sulphur amino acids). Sulphur amino acids are frequently the limiting factor in full diets.

There are 20 amino acids contained in the human body, 18 of which are essential for human nutrition. Humans and other mammals cannot synthesize eight amino acids (or in many other references such as [3] and [9] stated as nine with histidine) on their own, thus they must be obtained through food. These amino acids are referred to as essential amino acids (or indispensable amino acids). Lysine, methionine, threonine, tryptophan, isoleucine, leucine, phenylalanine, and valine are necessary amino acids. When you don't get enough of one of the essential amino acids, your body's muscle proteins start to break down [8]. Several additional amino acids, such as hydroxyproline, hydroxylysine, -carboxyglutamate, and methylhistidine, are found in proteins but are nutritionally insignificant since they cannot be re-used for protein synthesis. Other amino acids are found in meals as intermediates in metabolic processes, but they are not necessary for protein synthesis and are nutritionally insignificant. Homocysteine, citrulline, and ornithine are among them. Some non-protein amino acids found in plants are poisonous [8]. Below in Table 1 is amino acid groups categorized based on their importance in human diet.

Table-1. Indispensable, dispensable and conditionally indispensable amino acids

Indispensable	Dispensable	Conditionally Indispensable
Histidine	Alanine	Arginine
Isoleucine	Aspartic Acid	Cysteine
Leucine	Asparagine	Glutamine
Lysine	Glutamic acid	Glycine
Methionine	Serine	Proline
Phenylalanine		Tyrosine
Threonine		
Tryptophan		
Valine		

Source: [3]

The terms "dispensable" and "indispensable" for amino acids should be used with caution. It's possible that after their carbon skeletons are oxidized, surplus IAAs can produce nonessential N. In fact, it has long been known that dietary amino acid mixes high in IAAs, such as egg protein, are less successful at supplying demand than mixtures including nonessential nitrogen. With lower quantities of IAAs, such diluted mixes will preserve overall balance. This suggests that the demand includes an absolute requirement for nonessential N, which is met less efficiently by oxidation of excess IAAs than by DAAs. This desire for nonessential N has a metabolic foundation that is poorly defined [10].

3. MALNUTRITION CAUSED BY SHORTAGE OF PROTEIN INTAKE

Protein shortage has been demonstrated to have a negative impact on all organs and systems. Excess protein consumption from meals appears to pose a very minimal risk of negative consequences. The evidence on whether high-protein diets might cause gastrointestinal problems, changes in nitrogen balance, or chronic diseases such osteoporosis or kidney stones is mixed [3]. If the protein needs of our food are not met, in general it will have an impact on human metabolic and physiological response disorders, including: impaired absorption and digestion of nutrients, utilization of metabolic products, body nitrogen balance, muscle and bone mass, protein secretion, defense and immunity, growth and maturation and repair of body tissues. In the short term, disturbances that can arise in humans include tissue growth and repair (stunting and wasting), immune system function and body defense, muscle and bone mass (in carrying out activities), mental intelligence, mood, sleep patterns, detoxification and the body's antioxidant system. Stunting is defined as a reduced linear growth in children, resulting in shorter height for age than would be predicted and, in most cases, lifelong short stature. A common symptom of protein–energy malnutrition, especially when protein consumption is low [8]. While in the long term the impact of the disturbances include changes in activities of daily living, linear growth, menstruation, aging, loss of functions caused by increasing age (muscle, bone strength, immunity, cognitive decline), chronic diseases related to with nutrition, cardiovascular disease, cancer, hypertension, oxidative damage and body tissue repair system.

[11] stated that inadequate protein consumption to meet daily requirements results in a negative protein balance, which causes skeletal muscular atrophy, stunted muscle growth, and functional deterioration. To avoid muscle wasting and preserve skeletal muscle mass and function, it's critical to consume the right quantity of protein. As people get older, they eat less and less. Older folks, on average, eat slower, are less hungry and thirsty, eat smaller meals, snack less between meals, and absorb less energy than younger adults. As a result, it is critical to educate older folks about nutritious and calorie-dense foods, as well as provide tips on how to consume enough amounts of high-quality protein at each meal.

According to the World Health Organization (WHO), malnutrition related to protein and energy deficiencies is common in both children and adults worldwide. Approximately 6 million children die each year from this type of malnutrition. Protein deficiency can affect the brain and its function in toddlers and children, the immune system, increase the risk of infectious diseases, disorders of the mucosal function and intestinal permeability (which will affect protein absorption), susceptibility to systemic diseases (diseases that affect the entire body system).) and impaired renal function. Meanwhile, physical indications that can be observed due to protein deficiency include edema (swelling due to excess fluid), delayed physical growth in toddlers and children, muscle weakness, dull, dry and rough skin, and thin, dry hair, brittle and break easily. The risk or adverse effect of excess protein intake from food is known to be quite low. However, there is some information that states that a high-protein diet can cause digestive tract disorders, changes in nitrogen balance, osteoporosis and the formation of kidney stones [3]. Aside from animal-source foods, well-formulated complementary foods (e.g., a cereal–legume blend with good protein quality and a comprehensive micronutrient profile) can also help with growth patterns. Infants who received a cereal–legume porridge alone, with fish powder added, or with a micronutrient premix added, compared to those who received a cereal porridge with fish powder (no legume or micronutrients added), showed similar rates of weight and length gains, as well as similar improvements in major indicators of iron and zinc stores, but not iron and vitamin A stores, according to a study in Ghana [12].

4. THE METABOLISM PRINCIPLE OF PROTEIN

The metabolism of proteins and AAs is a complicated mechanism. Excess AAs are oxidized and expelled as urea as they move through the system, flowing to protein synthesis and other metabolic pathways. Dietary protein ingestion, bodily protein degradation, and de novo synthesis of non-essential AAs are all sources of AAs to meet need. Because the majority of AAs derived from protein degradation are identical to the amount and pattern of AAs used in protein synthesis, demand is mostly influenced by food intake and de novo synthesis. Finally, proper micronutrient levels, and hence the amount and quality of food ingested, are crucial to the routes of AA metabolism and exchange [12].

Dietary protein is metabolically important because it offers the building blocks (amino acids) for body protein synthesis. Because protein is central to body metabolism and many noncommunicable or so-called lifestyle diseases (e.g., diabetes, hypertension, and cardiovascular disease) are ultimately related to disturbances in body metabolism, dietary protein plays an important role in the maintenance of optimal body composition. Amino acids are absorbed and used to fuel body protein metabolism when they are liberated from proteins in the gastrointestinal tract (GIT). The amino acids are required to maintain existing protein and create new protein in infants and children, which is deposited during growth, whereas in adults, the absorbed amino acids are often utilized to replenish amino acids lost from the body during metabolism. Amino acids have unique metabolic activities in addition to their role in protein synthesis in the body (e.g., leucine and muscle protein synthesis; glutamine and gut energy supply; tryptophan and serotonin synthesis; and arginine and nitric oxide production). Although the requirement for amino acids for these specific metabolic functions is low in terms of volume, their availability is crucial for appropriate bodily function [13].

The GIT is where protein digestion takes place. Meal is broken down physically in the mouth by mastication, and the food is mixed with saliva and liquids to form a food bolus that can be swallowed and enter the stomach. Furthermore, the lumen of this organ provides a suitable medium for the action of digesting enzymes. Due to the activity of gastric hydrochloric acid and pepsins secreted by the parietal main cells, gastric digestion entails further physical breakdown of the food as well as denaturation and hydrolysis of protein. Protein digestion in the stomach produces a combination of protein, primarily big polypeptides and some free amino acids, with almost negligible amino acid absorption. The digested mixture passes through the stomach and into the small intestine (duodenum, jejunum, and ileum), where it is further hydrolyzed by a family of protease enzymes generated by the pancreas and enzymes found in intestinal cells. Amino acids are absorbed primarily as free amino acids, dipeptides, or tripeptides, with the peptides being acted on by cytosolic aminopeptidases, resulting in amino acids being absorbed mostly as free amino acids, dipeptides, or tripeptides in the portal circulation. Amino acids can be utilized to make body protein or, in small amounts, as precursors for a variety of nitrogen-containing molecules with specific biological activity, or they can be catabolized, with their nitrogen incorporated into urea, which is then eliminated in the urine. After deamination, the carbon skeleton of the amino acid can be oxidized for energy or utilized to manufacture fatty acids, which are stored as body lipid, depending on body energy status. Protein and oligopeptides that are not digested at the end of the ileum move into the colon, where they are extensively metabolized by bacteria, but amino acids are not absorbed from the human colon, at least not in nutritionally meaningful proportions [12], [14].

5. PROTEIN INTAKE

The amount of protein or its constituent amino acids, or both, that must be provided in the diet to meet metabolic demand and achieve nitrogen equilibrium is referred to as dietary requirement. Because of the factors that influence the efficiency of protein consumption, such as net protein utilization, the requirement will almost always be higher than the metabolic demand [2]. Increasing protein intake is very beneficial for all age groups. The reduction in fat content due to a low-energy diet for overweight people can take place more quickly. Gaining muscle mass and strength will be maximized when doing regular exercise accompanied by a high level of protein intake. High protein intake is also beneficial for people suffering from chronic infections or inflammation. But keep in mind that there are certain conditions where high protein intake is also associated with certain health risks (hypercalciuria, renal function disorder, cancers, hyperuricosuria etc.). There are also certain conditions where the addition of a specific amino acid intake is highly recommended. For example, the amino acid leucine is known as one of the regulators in the process of protein synthesis (formation), where a high intake of leucine can help overcome chronic situations such as cancer. Other clinical situations such as sepsis (blood poisoning), which are known to be associated with impaired rate of synthesis of the amino acid arginine, in which an increased intake of arginine will be beneficial in protein synthesis and improve immune function.

Several things can be predicted in relation to this protein intake, for example: protein needs are closely related to the muscle mass we have. The more muscle you have, the more protein you need to maintain it. Moreover, the more we use our muscles or the more physically active we are, the more protein we need. Another factor that can increase protein requirements is if we want to lose weight or have a desire for our body to be muscular. As mentioned earlier, to have muscle, you need protein to build and maintain it. When we cut calories to lose weight, we lose the combined weight of fat and muscle, but what we want is to lose more fat than muscle. A higher protein intake can help protect our lean muscle tissue and aid in overall fat loss.

The management of bone growth is likely to accomplish an individual's growth potential in height and general shape. This is genetically determined, so that if conditions are favorable, each individual follows a canalized growth curve in terms of both extent and time course, subject, of course, to optimal fetal condition to the extent that this effects postnatal height growth. Appropriate nutrition is clearly one of the favorable factors. Protein in the diet has an important part in this. Adult protein requirements can be defined as the least amount of protein required to maintain nitrogen balance (zero nitrogen balance) while maintaining an optimal body composition under energy balance and moderate physical activity [2]. Other references also states that adults who suffer from acute or chronic diseases are advised to meet protein intake of 1.2-1.5 grams per kilogram of body weight per day but still have to pay attention to the actual amount needed (depending on the disease and level of health and its severity) and other factors. Adults who are seriously ill or malnourished may require a total protein intake of up to 2 g/kg body weight, but this does not apply to people with kidney disease who should not increase their protein intake unless they are on dialysis treatment. Therefore, optimal protein intake will vary in value from one individual to another. For example, for groups of people who are classified as active in carrying out physical activities such as athletes, it is advisable to consume a higher protein intake than appropriate to maintain optimum physical performance.

So how much protein should we consume? The most widely cited reference is the need for protein intake based on the standard Recommended Dietary Allowance (RDA), which is for adults (ages 19 to >70 years) of 0.8 grams of protein per kilogram of individual body weight per day. Meanwhile, for those younger than that, the need varies between 0.85-1.2 g/kg body weight/day. A higher amount of protein 1.1-1.3 g/kg body weight/day is needed for women who are pregnant and breastfeeding [3], [10], [15]. Protein quality and quantity are key considerations for athletes in particular, and vegetarian or vegan athletes may find it much more difficult to achieve their protein requirements. According to the American College of Sports Medicine and the Academy of Nutrition and Dietetics, endurance athletes should consume approximately 0.4–0.6 g of protein per kilogram of body weight above the RDA, while athletes participating in sports emphasizing strength and power may require as much as 2.0 g per kilogram of body weight. Due to their enhanced protein turnover rates and maybe some amino acid oxidation during endurance sports, endurance athletes benefit from a higher protein consumption than the RDA [16]. The protein requirements for athletes have been the topic of significant controversy in the scientific community. The idea that strength/power and endurance athletes require more protein than the general population has just lately gained traction [17]. It's difficult to say which protein level in the diet combined with exercise is best for improving immune functions, but the enhanced effect of exercise on the immune system appears to be related to protein levels in diets, and it's necessary to consume enough protein to make up more than 5% of the diet [18]

Food proteins are a necessary component of the diet for humans to survive. Their primary nutritional importance is to provide enough levels of essential amino acids [16].The metabolic demand for amino acids of a newborn infant is unknown, and the amino acid pattern in human milk does not always correspond to the pattern of amino acid requirements. In fact, it's likely that amino acid consumption from breast milk exceeds real demand. The amino acid content of breast milk is indicated as the current best estimate of amino acid requirements for 0-6 month age group. Breast milk from a healthy well-nourished woman is regarded to satisfy protein requirements during the first 6 months of life [1].

Maintenance (metabolic activities that use amino acids (AA) and create N molecules expelled via urine, feces, perspiration, and other miscellaneous losses), specific demands (growth, lactation, and pregnancy), and utilization efficiency are all factors that influence protein requirements (factors related to digestion of proteins and absorption of AAs). Because of differences in metabolic demand, genetics, and other factors that impact phenotypic and physiologic circumstances, the intakes at which balance is reached vary within and among individuals (growth, pregnancy, and lactation). Protein requirements are further affected by utilization efficiency (net protein utilization), dietary intakes of other nutrients, lifestyle, and environmental stress (including infection) [11]. Recently, research has focused on health, bodyweight control, and bodily function qualities as factors for determining protein and amino acid requirements, and protein requirements estimations based on this method are frequently substantially higher than current official recommendations [13].

1.4 Recommended Dietary Allowance for Protein

The RDA is defined as the average daily nutritional intake sufficient to meet the nutritional requirements of nearly all (97-98%) healthy individuals at a given life stage and gender group. Values listed in the RDA usually exceed the needs of most members of the population group. This value can be used as a guideline for daily nutritional intake by each person and because the value is above the needs of most people, a nutrient intake below the RDA cannot be called insufficient. The RDA should also not be used for the actual assessment of individual intake. Assessment of individual intake must be carefully interpreted from a combination of several information or factors that can affect a person's nutritional status, such as anthropometric data, biochemical measurements, dietary patterns, habits and lifestyles and the presence or absence of certain diseases. Below in Table 2 is the dietary reference intake for protein based on human life stages (males and females) and their RDA. There is no indication that amino acids generated from normal or even high protein intakes from diet are harmful. Because data on the negative effects of high levels of amino acid intake from dietary supplements is sparse, consuming any single amino acid at a level much higher than that found in food should be approached with caution [3].

Table-2. Protein dietary intake based on life stages

Life Stages	RDA (g/kg/day)
7-12 month	1.2
1-3 year	1.05
4-8 year	0.95
9-13 year	0.95
14-18 year	0.85

19-30 year	0.80
31-50 year	0.80
51-70 year	0.80
>70 year	0.80
Pregnancy	1.1
Lactation	1.3

Sources: [3]

The protein requirement can be defined as: the lowest level of dietary protein intake that will balance the losses of nitrogen from the body, and thus maintain the body protein mass, in persons at energy balance with modest levels of physical activity, on the basis that dietary protein requirements must provide for maintenance and any special needs of growth, reproduction, and lactation [2]. For the planning of nutritionally balanced diets, information on the composition of foods and the availability of dietary components is required. Humans require a diet that provides a well-balanced pattern of essential amino acids, as well as enough total nitrogen for the synthesis of non-essential amino acids and other compounds. Protein accounts for 10–20 percent of the human diet, and optimizing this protein fraction necessitates matching the quantities of accessible nitrogen and essential amino acids to the organism's requirements [20].

The Protein Dietary Allowance (RDA), which is based on nitrogen studies in younger and healthier people, is not very useful for guiding the dietary prescription of geriatric patients, especially those who are critically ill. Indeed, the limited nitrogen balance studies conducted in older persons produce mixed results, with some confirming the present protein RDA and others indicating that larger protein consumption are required to prevent nitrogen loss. It's worth noting that protein requirements rise dramatically as the severity of the sickness rises. Patients with mild to severe sickness should be given 0.8 to 1.2 g/kg protein per day, whereas critically ill patients should be given 1.2 to 1.5 g/kg protein per day, according to current clinical practice standards [11].

Proteins' primary role in human diet is to provide sufficient amounts of amino acids for the synthesis of our own proteins. The nutritional value of proteins is determined by various factors, including amino acid composition, essential amino acid ratio, susceptibility to enzyme digestion during gastrointestinal passage, and amino acid changes introduced during food preparation. The nutritional quality of the proteins produced by various protein sources varies greatly. Although the amount required by young adult males varies depending on metabolic status, age, sex, nutrition, and health conditions, the amount necessary in general is 0.6 g/kg body mass. This figure is purely theoretical, because it relates to ‘ideal' proteins with the correct amino acid composition and digestibility. If the intake is based on proteins with a non-ideal amino acid composition (which is almost always the case), the number should be increased to 0.8 g/kg, and if average digestibility is also taken into account (which is almost always far from ideal), a more realistic value of 1 g/kg body mass should be considered [19].

4. CONCLUSIONS

Protein is an important part of a balanced diet. The nutritional quality of any meal protein is influenced by the following factors: the quantities of certain important amino acids, which should ideally – be similar to those found in body proteins; the energy provided, which is required for protein synthesis in the body; the protein's digestibility Amino acids are arguably the most crucial factor in describing a protein's properties. As a result, maintaining cellular function and integrity, as well as human health and reproduction, requires a proper supply and intake of protein from diet. Several aspects can be expected in relation to protein consumption, for example, protein requirements are directly related to muscle mass. The more muscle you have, the more protein you'll require to keep it healthy. The most often referenced guideline for how much protein should we consume is the demand for protein consumption based on the standard Recommended Dietary Allowance (RDA), which is 0.8 grams of protein per kilogram of human body weight per day for adults (ages 19 to >70 years). In the meantime, the daily requirement for children younger than that ranges from 0.85 to 1.2 g/kg body weight. Women who are pregnant or lactating require a greater protein intake of 1.1-1.3 g/kg body weight per day.

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