VOL. 2

The Benefits of Protein in Early Childhood Development

ab&c

awareness, benefits, & change

Understanding Childhood Nutrition

Animal proteins are the key to cognitive and physical developments in children.

Infancy, childhood, and adolescence are measured by many demanding physical and cognitive milestones. Babies' first goals are to double their birth weight, then sit up, crawl, and walk. We watch as toddlers learn to run, jump, and recite their ABCs. Teenagers demonstrate expanding intelligence and physical capabilities. Proper nutrition is required for the mind and body to fully develop in support of this explosive growth.

The Building Blocks of Nutrition

According to the USDA's *MyPlate* program[1], a balanced diet of proper calories and nutrients should be made up of approximately the following:

30% grains
40% vegetables
10% fruits
20% protein
1 serving of dairy

Depending on the age and weight of a child, serving sizes and exact percentages will vary.

One of the key building blocks to achieving proper nutrition is protein. The protein food group contains meat, poultry, seafood, beans and peas, eggs, processed soy products, nuts, and seeds.

Our body's growth relies heavily on protein. It supports the development of our bones, muscles, cartilage, skin, and blood. Hair and nails are predominantly made up of protein.

20% – 30%
of a child's diet
should come from protein

We also need protein to make enzymes, hormones, and vitamins that are critical to brain and immune system functions.

Protein, along with fats and carbohydrates, provides needed calories to our body. These added nutrients are necessary during the aggressive growth and development that occurs from birth until early adulthood. Childhood protein requirements are significantly higher per pound of body weight than what an adult needs. This shifts the balanced dietary requirement of protein up to as high as 30% of the total caloric intake between the ages of 4 and 18 years old.[2]

Now that we understand that a measurable amount of protein is critical to proper nutrition, particularly to aid in physical and cognitive development during childhood, it leads to the question...

Daily Protein Requirements

Age 1–3 Years

½ cup milk = 4g
½ cup peas = 3g
1 egg = 6g

Age 4–8 Years

¾ cup whole grain cereal = 3g
1 sweet potato = 2g
2 ounces chicken = 14g

Age 9–13 Years

1 cup broccoli = 2.5g
½ cup brown rice = 3.5g
mozzarella cheese stick = 7g
3 ounces beef = 21g

The total grams represent the minimum daily protein intake.[3]

Does the source of protein matter?

This topic is often debated, critiqued, and even misstated in health and wellness publications. Headlines profess that a plant-based diet is key to a healthy lifestyle. They are often written to generate fear through claims that animal proteins are filled with saturated fats linked to countless health risks, from obesity to disease or death. Behind these misleading articles is the hypothesis that animal proteins are "bad" while plant-based proteins are "good." But is this true? Are animal proteins better or worse than alternative protein sources, or are all proteins created equal?

All proteins are NOT created equal

The answer is that **NO, all proteins are not created equal;** therefore, **YES, the source of protein does matter.**

Our body's metabolic processes require proteins, which are made up of amino acids, to properly function. Our body needs a balance of twenty types of amino acids. We can naturally produce eleven; the other nine essential amino acids must come from the food we eat. Unfortunately, the majority of plant proteins, like beans, lentils, and nuts, are missing at least one of the essential amino acids that our body needs and are considered "incomplete protein sources." Conversely, animal proteins including meat, fish, poultry, eggs, and dairy, are considered "complete protein sources," containing all the essential amino acids that we require.[4]

The 2010 Report of the Dietary Guidelines Advisory Committee recommends eating more fruits, vegetables, whole grains, beans, nuts, and seeds to reduce the risk of chronic disease and ensure adequate nutrients are consumed. However, they do not recommend the elimination of animal proteins from the diet. The Committee goes on to state that animal foods provide a higher quality as well as a greater quantity of protein per calorie. This combination is particularly valuable to the cognitive and physical developments that occur during childhood.

Here is a list of some critical vitamins and nutrients that are most commonly found in animal-based proteins:[4]

VITAMIN B12

Source: Fish, Meat, Poultry, and Dairy

Benefit: Supports nerve health, the production of DNA and red blood cells, and helps maintain normal brain function.

Deficiency: Children can experience developmental delays, slowed growth, irritability, neurological problems, and weakness.

HEME IRON

Source: Red Meat

Benefit: Used to carry oxygen in the blood, treat anemia, fight fatigue, improve muscle strength, and boost immunity and concentration.

Deficiency: Iron-deficient anemia is common in children. Non-heme iron from plant-based foods is not as easily absorbed by the body.

ZINC

Source: Beef, Pork, and Lamb

Benefit: Supports biochemical reactions and helps the immune system function properly.

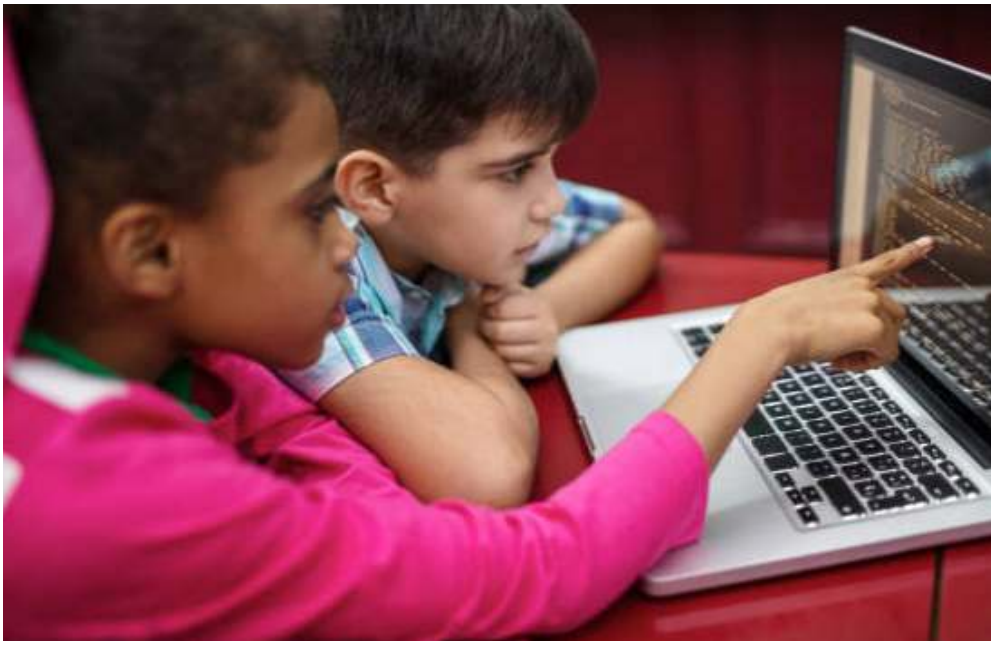
Deficiency: Children may experience growth impediments and increased risk of infection.

It is clear that protein source does matter and animal proteins are not "bad." In fact, they offer many health benefits that cannot be found in plant-based alternatives.

Top 10 Proteins[7]

Animal foods offer more protein per calorie; seven of the top ten foods highest in protein are animal-source proteins.[7]

1. Lean Chicken Breast
2. Lean Pork Chops
3. Tuna
4. Beef Skirt Steak
5. Firm Tofu
6. Lentils
7. Low-Fat Yogurt
8. Grated Parmesan
9. Seeds
10. Eggs



Animal Protein Proven Critical in Early Childhood

Researchers from the USDA ARS Western Human Nutrition Research Center[5] reviewed the role of animal-source protein in early childhood development. The study evaluated at-risk children in undeveloped nations where access to milk and other animal-source foods can be less than 5% of total calorie intake.

Without access to the critical nutrients derived from these foods, particularly Vitamin B12, which is only derived from animal protein, children experienced growth and cognitive delays. Too little protein can create a deficiency in children, leading to multiple health issues, including fatigue, poor concentration, slowed growth, bone and joint pain, delayed wound healing, and decreased immune response.[6]

Even if a child consumes enough protein from plant sources, but if that child does not meet minimum caloric needs, critical nutrients will be used for their daily energy demands. In turn, muscle mass development and maintenance, as well as hormone production, will be diminished. Muscle mass gains are associated with improved neurodevelopment in early life. The lack of muscle mass and strength is linked to multiple metabolic risk factors, along with the reduction of bone parameters during growth.[6] In the study, developmental improvements were shown after interventions with milk and animal proteins, which provide a higher quantity of protein per calorie.

In developed nations like the United States, we are fortunate that children have greater access to whole nutrition. When adequate nutrition can not be provided in their own home, subsidized programs, like the USDA's National School Lunch Program, are available to support healthy growth and cognitive development in early childhood.

References: 1. United States Department of Agriculture, 2015–2020 Dietary Guidelines. **2.** Getting Childhood Off to a Strong Start with Protein. International Food Information Council Foundation, October 2010. **3.** The National Academies of Science, Engineering, and Medicine, Dietary Reference Intakes. June 2018. **4.** Animal vs. Plant Protein–What's the Difference? *Healthline*, June 2017. **5.** The importance of milk and other animal-source foods for children in low-income countries. USDA ARS Western Human Nutrition Research Center, September 2011. **6.** Low muscle mass and strength in pediatrics patients: Why should we care? *Clinical Nutrition Journal*, April 2019. **7.** Top 10 Foods Highest in Protein. MyFoodData.com, July 2019.

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