Journal of Indonesian Specialized Nutrition
e-ISSN: 3032-3878

Animal Protein and Growth Formula: Nutrition Foundations for Children 5 Years and Older

Nova Sitorus[1*], Irma Nuraeni Salsabila[2]

[1,]Danone SN Indonesia, Jakarta, Indonesia

[2]Ridwan Institute, Cirebon, Indonesia

*Correspondence: nova.sitorus@danone.com

***ABSTRACT*:** Animal protein plays an important role in ensuring optimal nutritional intake, supporting muscle and tissue formation, and improving immunity. In addition, growth formulas specifically designed for children in this age group provide additional nutrients that may not always be met through daily food. This study aims to analyze the benefits of animal protein and growth formula in supporting physical and cognitive development in children aged 5 years and above. This study uses a qualitative research method. The data collection technique in this study was through literature studies. The data that has been collected was then analyzed in three stages, namely data reduction, data presentation and drawing conclusions. The results of the study showed that the combination of animal protein and growth milk helps children meet their daily nutritional needs required for optimal growth. These two sources of nutrition complement each other in providing a balanced intake and preventing malnutrition. The intake of protein and essential nutrients from growth milk also plays a role in increasing children's immunity, reducing the risk of disease, and supporting their mental and emotional development. Therefore, ensuring that children get enough animal protein and growth milk is essential to building a strong foundation for health and productivity in the future.

Keywords- Animal Protein, Growth Formula, Nutrition Foundations, Children

INTRODUCTION

Nutrition for children follows similar principles to nutrition for adults. Every individual, regardless of age, requires the same types of nutrients, including vitamins, minerals, carbohydrates, proteins, and fats. However, children require specific amounts of nutrients that vary according to their growth stage to support their development (Gibney, 2023). Nutrition is very important for children as it affects almost every aspect of their physical and mental development (Paramita et al., 2023). Fulfilling children's nutritional needs and daily protein intake at a crucial age for growth plays a major role in increasing the

DOI: 10.46799/jisn.v1i5.28

height of school-age children (5-10 years). Malnutrition can cause a range of serious health problems, especially in children who are in a critical growth period (Sundjaya et al., 2024). If this aspect is ignored, there is a risk that the nutritional intake provided in the long term will not be in accordance with the needs, which can hinder brain development (Fani & Yulman, 2022). The consequences can be mental retardation, low learning ability, and an increased risk of chronic diseases such as diabetes, hypertension, and obesity. Therefore, the need for daily protein intake, especially from animal protein sources, is very important to consider for optimal child growth and development (Fani & Yulman, 2022). Animal protein is a type of protein obtained from animal sources, such as beef, goat, chicken, duck, seafood, and eggs. One of the advantages of animal protein is its more complete essential amino acid content compared to vegetable protein. In addition, animal protein also contains many micronutrients, including vitamin B12, vitamin D, DHA (docosahexaenoic acid), iron, and zinc (Adawiyah, 2017).

Animal protein plays a crucial role in ensuring optimal nutritional intake for children, especially in supporting muscle and tissue formation and improving the immune system. In addition, growth formulas specifically designed for children in this age group provide additional nutrients that may not always be met through daily food. Growth formula refers to nutritional products specifically designed to support the growth and development of children, especially those aged 5 years and above. This growth formula usually consists of a mixture of animal protein, vitamins, minerals, and other nutrients that are important to support the nutritional needs of children who are experiencing growth. So with the combination of animal protein and growth formula, children can get a balanced nutritional intake, which is very important to support their overall health and development (Garcia-Iborra et al., 2023).

Previous research by (Sindhughosa & Sidiarti, 2023) showed that animal protein intake has a greater effect on stunting than plant based protein intake. Another study by (Shim et al., 2020) showed that supplementation with a concentrated and balanced pediatric nutritional formula along with dietary education may be an effective approach to improve growth in children with non-organic growth retardation. This study enriches the literature on child nutrition by highlighting the interaction between animal protein and growth milk in supporting optimal growth. These findings may pave the way for further research into the mechanisms behind the role of animal protein in child health, including its impact on the immune system and mental development. In addition, this study may trigger studies on how variations in animal protein intake affect children's long-term health, as well as its contribution to reducing nutritional problems among children. This study aims to analyze the benefits of animal protein

DOI: 10.46799/jisn.v1i5.28

and growth formula in supporting physical and cognitive development in children aged 5 years and above.

RESEARCH METHODS

This study uses a qualitative research method. Qualitative research methods are research approaches used to understand social and cultural phenomena in depth through exploration and interpretation. This study emphasizes the process and meaning resulting from interactions, events, or experiences, rather than numerical or statistical data (Niam et al., 2024). The data collection technique in this study was carried out through literature studies, namely the collection of secondary data obtained from various sources such as journals, books, scientific articles, research reports, and other documents relevant to the research topic. Literature studies allow researchers to identify findings and perspectives that have been discussed in previous studies, so that they can strengthen the theoretical basis and deepen understanding of the topic being studied. The data that has been collected is then analyzed in three stages, namely data reduction, data presentation and drawing conclusions.

RESULTS AND DISCUSSION

Children aged 5 years and above enter an important developmental stage, where their physical growth, cognitive abilities, and social skills progress rapidly. Physically, children at this age experience significant growth in height and weight, with increased fine and gross motor coordination. They begin to be more proficient in physical activities such as running, jumping, and drawing in greater detail. Fine motor skills, such as writing and holding tools better, also develop (Aurelie et al., 2024). In addition, their bone and muscle growth require adequate nutritional intake. In terms of cognitive development, the age of 5 years and above is when children begin to show significant progress in logical thinking and problem solving. They begin to understand the concept of time, numbers, and are able to remember information better and begin to learn to read and write (Harianja et al., 2023).

Children at this stage tend to think intuitively rather than logically. They often rely on perception rather than deep reasoning and tend to generalize based on outward appearances. In addition, children at this stage also engage in imaginative and symbolic play, where they imitate the roles of adults or create imaginary scenarios (Wulan & Wildayani, 2024). Although their thinking is not yet fully logical, this

DOI: 10.46799/jisn.v1i5.28

stage is an important foundation for further cognitive development. Children at this stage also become more curious and have a developed imagination, allowing them to learn new social and academic skills more quickly. Their ability to interact with their surroundings also increases, which encourages them to learn from peers and adults (Aghnita, 2017).

In social-emotional development, children aged 5 years and above begin to show greater independence. They learn to work together with friends, understand social rules, and begin to show empathy towards others. This is also an important stage in the formation of self-confidence and self-concept (Fadilah et al., 2024). The balance between cognitive stimulation, healthy social interactions, and adequate nutritional intake is key to ensuring that children achieve their growth and development milestones optimally, both physically and psychologically (Rumiyati & Zulfitria, 2024).

Children aged 5 years and above are in a critical developmental phase known as the "golden age," marked by rapid physical and brain growth. During this period, balanced nutrition is essential to support their physical, cognitive, and social development. Adequate intake of carbohydrates, proteins, healthy fats, vitamins, and minerals ensures optimal growth (Mayar & Astuti, 2021). Nutritional deficiencies at this stage can negatively affect their health, learning, and growth. Therefore, providing diverse and nutritious food, along with instilling healthy eating habits, is crucial for helping children reach their full potential (Widodo et al., 2023).

The developmental period of children aged 5 years and above is crucial for their future health and productivity. At this age, children undergo rapid development in physical, cognitive, and socio-emotional aspects, all of which serve as an essential foundation for long-term well-being. The growth of muscles, bones, and the nervous system reaches its peak, requiring balanced nutritional intake (Mu'tafi et al., 2024). Moreover, the rapid brain development influences learning and problem-solving abilities, shaping how children adapt to academic and social challenges. Proper nutrition ensures a strong foundation for physical health, optimal growth, and disease resistance (Munthe et al., 2024). Additionally, nutrition, particularly animal protein, vitamins, and minerals, supports brain development, which enhances cognitive skills and concentration (Farida et al., 2023). Social skills developed during this period, such as teamwork and problem-solving, become valuable social capital. Nutritional deficiencies or developmental disorders during this phase can lead to health issues like stunting or cognitive impairment, impacting the child’s future productivity (Yue et al., 2024).

DOI: 10.46799/jisn.v1i5.28

Nutritional fulfillment for children aged 5 years and above must be balanced and include macronutrients such as protein, carbohydrates, and healthy fats, as well as important micronutrients such as vitamins and minerals. At this age, children need animal protein that is rich in essential amino acids to support muscle growth and brain development. In addition, calcium and vitamin D intake are essential for the development of strong bones and teeth. Iron is also needed to maintain healthy hemoglobin levels and prevent anemia, which often occurs in children at this age. To support endurance, vitamins A, C, and E play an important role in strengthening the immune system (Lee et al., 2023). Good nutrition plays a very important role in the early stages of a child's development, because this period is a critical period for physical growth, brain development, and the formation of the immune system. Adequate and balanced nutrition, including protein, vitamins, minerals, and essential fatty acids, is essential to support the growth of body tissues and the development of vital organs (Hutabarat et al., 2024).

The most common nutritional deficiency risk experienced by children aged 5 years and above is iron deficiency, which can cause anemia. In addition, calcium and vitamin D deficiencies are also common and can inhibit bone development, causing growth problems such as rickets. Lack of animal protein can have an impact on impaired physical and cognitive growth, because essential protein is essential for the development of muscles and body tissues (Kiani et al., 2022). In addition, vitamin A deficiency can weaken the immune system and increase the risk of infection. Therefore, ensuring that children get enough nutrition from nutritious foods and, if necessary, additional growth milk, is very important to prevent deficiencies and support optimal development (Kaur et al., 2019).

Animal protein is a better source of protein compared to plant based protein because it has a more complete amino acid composition. Animal protein, such as meat, fish, eggs, and milk, contains all the essential amino acids needed by the body, so it is called complete protein (Lubis et al., 2023). In addition, animal protein has higher bioavailability, meaning it is more easily absorbed and used by the body. Animal protein sources also usually contain other important nutrients, such as vitamin B12, heme iron, and omega-3 fatty acids, which are less commonly found in vegetable protein. Animal protein has a very important role in supporting the growth and development of children, especially at the age of 5 years and above (Maherawati et al., 2023). Animal protein sources, such as meat, fish, eggs, and dairy products, are rich in essential amino acids needed for muscle growth, tissue formation, and repair of body cells. These essential amino acids cannot be produced by the body and must be obtained from

DOI: 10.46799/jisn.v1i5.28

food, so meeting animal protein needs is crucial to ensure optimal child growth. Animal protein also helps increase strength and endurance, which is important for children's physical activity and motor development (Nursani et al., 2023).

Growth milk also plays an equally important role in supporting children's growth and development. Growth milk is usually enriched with various important vitamins and minerals, such as calcium, vitamin D, and iron, which contribute to bone health, the immune system, and brain function. The intake of these nutrients is very important for children as it plays a major role in supporting their growth and development (Sunardi et al., 2021). Calcium and vitamin D, for example, work together to support strong bone growth and prevent problems such as rickets. In addition, growth milk also provides the energy needed by children to carry out daily activities, as well as support their learning process and cognitive development (Hendrarto, 2020).

Thus, the combination of animal protein and growth milk, children can meet the daily nutritional needs required for optimal growth and development. Both complement each other in providing balanced nutritional intake and preventing nutritional deficiencies. Fulfillment of protein and nutrient intake from growth milk can also contribute to increasing children's immune system, reducing the risk of disease, and supporting the development of their mental and emotional health. Therefore, ensuring children get enough animal protein and growth milk is very important to create a strong foundation for their health and productivity in the future.

CONCLUSION

The combination of animal protein and growth milk provides a significant contribution to meeting children's daily nutritional needs, which are essential for optimal growth. These two sources of nutrition work synergistically, complementing each other in providing balanced nutritional intake and preventing the risk of malnutrition. In addition, the protein and nutrients contained in growth milk play an important role in increasing children's immune systems, reducing the risk of disease, and supporting the development of their mental and emotional health. Thus, ensuring that children get enough animal protein and growth milk is crucial in building a strong foundation of health and increasing their productivity in the future.

DOI: 10.46799/jisn.v1i5.28

REFERENCES

Adawiyah, R. T. (2017). *Faktor-Faktor yang Mempengaruhi Tingkat Konsumsi Bahan Pangan Sumber Protein Hewani Asal Ternak di Kecamatan Kuala Jambi Kabupaten Tanjung Jabung Timur* (Doctoral dissertation, UNIVERSITAS JAMBI).

Aghnaita. (2017). Perkembangan fisik-motorik anak 4-5 tahun pada Permendikbud No. 137 Tahun 2014 (kajian konsep perkembangan anak). *Al-Athfal: Jurnal Pendidikan Anak,* 3(2), 219-234.

Aurelia, G. M., Fitriani, Y., & Nuroniah, P. (2024). Dampak keterampilan sosial emosional rendah terhadap komunikasi anak usia 5 tahun: Studi kasus. *Murhum: Jurnal Pendidikan Anak Usia Dini,* 5(1), 546-557. https://doi.org/10.37985/murhum.v5i1.596

Fadilah, N. H., Khadijah, & Aulia, J. D. (2024). Perilaku sosial emosional pada anak usia dini. *Jurnal Ilmiah Multidisiplin,* 1(5), 160-165. https://doi.org/10.62017/merdeka

Fani, D. N., & Yulman, A. R. (2022). Protein Hewani sebagai Zat Gizi Penting bagi Pertumbuhan Anak. https://rs.ui.ac.id/umum/berita-artikel/artikel-populer/protein-hewani-sebagai-zat-gizi-penting-bagi-pertumbuhan-anak#:~:text=Protein%20hewani%20adalah%20protein%20yang,lebih%20lengkap%20dibandingkan%20protein%20nabati. Diakses pada 24 September 2024.

Farida, N., Ningsih, R. W., & Ndruru, A. I. J. (2023). Pengaruh model pembelajaran STEAM terhadap perkembangan kognitif anak usia 5-6 tahun. *Journal on Education,* 6(1), 10383-10399.

Gibney, E. (2023). Basic Principles of Nutrition. *Nutritional Psychiatry: A Primer for Clinicians*, 1.

Harianja, A. L., Siregar, R., & Lubis, J. N. (2023). Upaya meningkatkan perkembangan sosial emosional anak usia dini melalui bermain peran. *Jurnal Obsesi: Jurnal Pendidikan Anak Usia Dini,* 7(4), 4871-4880. https://doi.org/10.XXX/xxxxx

Hendrarto, T. W., Nurahma, W. A., & Marpauling. (2020). Pengaruh asupan nutrisi pada bayi prematur dengan pertumbuhan ekstrauteri terhambat di Rumah Sakit Anak Bunda Harapan Kita. *Sari Pediatri*, 22(3), 169-175.

Hutabarat, D. T. H., Bima, M. A., Syahfitri, N., & Manurung, S. D. (2024). Kajian literatur tentang upaya pencegahan stunting anak melalui imunisasi dan asupan gizi. *Jurnal Ilmiah Wahana Pendidikan,* 10(7), 298-310. https://doi.org/10.5281/zenodo.11064179

Kiani, A. K., Dhuli, K., Donato, K., Aquilanti, B., Velluti, V., Matera, G., Iaconelli, A., Connelly, S. T., Bellinato, F., Gisondi, P., & Bertelli, M. (2022). Main nutritional deficiencies. *J Prev Med Hyg,* 63(2 Suppl 3), E93-E101. https://doi.org/10.15167/2421-4248/jpmh2022.63.2S3.2752

Kaur, D., Rasane, P., Singh, J., Kaur, S., Kumar, V., Mahato, D. K., Dey, A., Dhawan, K., & Kumar, S. (2019). Nutritional interventions for elderly and considerations for the development of geriatric foods. *Curr Aging Sci,* 12(1), 15-27. https://doi.org/10.2174/1874609812666190521110548

Lee, J. H., Lee, T. S., Yoo, S. Y., Lee, S. W., Jang, J. H., Choi, Y. J., & Park, Y. R. (2023). Metaverse-based social skills training programme for children with autism spectrum disorder to improve social interaction ability: An open-label, single-centre, randomised controlled pilot trial. *eClinicalMedicine,* 61, 102072. https://doi.org/10.1016/j.eclinm.2023.102072

Lubis, N., Parija, I., Haspian, D. M., Akbar, M. N., Al Hafiz, M. Z., Harmadani, P., Nurjannah, S., Sari, N., Andini, S., Hasanah, U., & Septiana, L. (2023). Pengaruh protein hewani terhadap penurunan angka stunting pada anak di Kampung Tengah. *Jurnal Pengabdian dan Kemitraan Masyarakat (ALKHIDMAH),* 1(4), 109-114. https://doi.org/10.59246/alkhidmah.v1i4.521

Maherawati, D., Suswati, D., Dolorosa, E., Hartanti, L., & Fadly, D. (2023). Sosialisasi gizi telur sebagai protein hewani murah untuk pencegahan stunting. *JMM (Jurnal Masyarakat Mandiri),* 7(4), 3312-3322. https://doi.org/10.31764/jmm.v7i4.15823

Mayar, F., & Astuti, Y. (2021). Peran gizi terhadap pertumbuhan dan perkembangan anak usia dini. *Jurnal Pendidikan Tambusai;* 5(3), 9695-9704.

Mu'tafi, A., Firdaus, Z., Romadhona, F., Mubarok, I. S., Hidayatullah Agung, A., Wahyuni, A. N., Larasati, R., Nurhidayat, Y. K. H., Ma'arif, S., & Aufa, A. (2024). Membangun generasi cerdas di Desa Binangun: Menuju masa depan gemilang dengan gizi seimbang dan bebas stunting. *Jurnal Penelitian dan Pengkajian Ilmiah*, 1(9), 589-597. https://doi.org/10.62335

Munthe, A. P., Butarbutar, J. N., Simanjuntak, C. R., Sipayung, C. A., Siburian, F., & Naibaho, D. (2024). Dinamika psikologi perkembangan pada fase perkembangan manusia di Desa Mularawi. *Jurnal Ilmiah Multidisiplin Ilmu (JIMI),* 1(3), 41-49.

Niam, M. F., Rumahlewang, E., Umiyati, H., Dewi, N. P. S., Atiningsih, S., Haryati, T., ... & Wajdi, F. (2024). Metode penelitian kualitatif.

Nursani, R. A., Indriani, D. R., & Lestari, R. H. (2023). PKM pentingnya konsumsi protein hewani bagi anak usia dini di SD Inpres 12/79 Lonrae Kec. Tanete Riattang Timur Kab. Bone. *JPM (Jurnal Pengabdian Mandiri),* 2(7), 1667-1672.

Paramita, M., Helmyati, S., Basrowi, R. W., & Dilantika, C. (2023). Risk Factors for Stunting among Infants on Java Island: A Cross-Sectional Study using the 2021 Indonesian Nutritional Status Survey Data. *Amerta Nutrition,* 7.

Rumiyati, & ZulFitria. (2024). Peran permainan edukatif dalam pengembangan keterampilan sosial dan kognitif anak usia dini. *Cendikia: Jurnal Pendidikan dan Pengajaran,* 2(7), 468-478.

Shim, J. O., Kim, S., Choe, B. H., Seo, J. H., & Yang, H. R. (2020). Effect of nutritional supplement formula on catch-up growth in young children with nonorganic faltering growth: a prospective multicenter study. *Nutrition research and practice*, *14*(3), 230-241.

Sindhughosa, W. U., & Sidiartha, I. G. L. (2023). Asupan protein hewani berhubungan dengan stunting pada anak usia 1-5 tahun di lingkungan kerja Puskesmas Nagi Kota Larantuka, Kabupaten Flores Timur. *Intisari Sains Medis*, *14*(1), 387-393.

Sunardi, D., Bardosono, S., Basrowi, R. W., Wasito, E., & Vandenplas, Y. (2021). Dietary determinants of anemia in children aged 6–36 months: A cross-sectional study in Indonesia. *Nutrients,* 13(7), 2397.

Widodo, S. T., Aprillia, Y., & Metty. (2023). Efektivitas metode permainan gambar tebak untuk meningkatkan pengetahuan gizi seimbang pada anak usia dini. *JIIP (Jurnal Ilmiah Ilmu Pendidikan),* 6(7), 5455-5459.

Wulan, S. E. H., & Wildayani. (2024). Perkembangan peserta didik anak usia dini umur 2-6 tahun. *Jurnal Pendidikan dan Dakwah*, 1(2), 106-118.

Yue, Y., Huang, J., Yuan, H., Zhao, Y., Lei, J., & Fan, J. (2024). The mediating role of self-competence in the relationship between parental involvement and support and children's social skills: Evidence from China. *Children and Youth Services Review,* 161, 107641. https://doi.org/10.1016/j.childyouth.2024.107641