American Meat Science Association

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Office of the Assistant Secretary for Health
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Via: Electronic Submission

Re: Request for Public Comments on the Scientific Report of the 2025 Dietary Guidelines Advisory Committee - Docket No. HHS-OASH-2024-0017

On behalf of the American Meat Science Association (AMSA), a professional society of over 2,100 scientists representing research, teaching, and industry expertise in meat science, we appreciate the opportunity to provide comments on the Scientific Report of the 2025 Dietary Guidelines Advisory Committee (DGAC). Our comments focus on three critical areas: terminology and definitions, protein quality, and the unique micronutrient contributions of meat.

Terminology and Definitions

Accurate terminology is fundamental to informed public health decisions. The DGAC Scientific Report uses broad umbrella terms like “red meat” and “processed meat” without sufficient distinction, creating ambiguity for policymakers, researchers, and consumers. Aggregating all red meats in one category, e.g. beef, pork, and lamb, ignores their distinct nutritional profiles, processing methods, and roles in dietary patterns, making it difficult to interpret research results and develop meaningful health recommendations. For example, fresh lean beef differs significantly from higher-fat cuts, just as minimally processed pork loin differs nutritionally from cured ham. Using these distinct classifications helps avoid misrepresentation of meat’s contribution to the diet.

AMSA urges the Departments to adopt the **Meat Science Lexicon**, a peer-reviewed resource that provides clear definitions of meat types and processing levels[1] (Seman et al., 2018). Lack of clear definitions results in inaccurate estimation of intake/consumption for various meat types, which further misrepresents the contribution of these foods to our diets. For example, equating minimally processed items like ground beef with cured meats or fermented products such as salami overlooks the unique nutritional profiles, production methods, and roles these products play in balanced diets. Without precise terminology, consumers and policymakers may be misled, making it critical to ensure dietary recommendations are based on well-defined and scientifically accurate categories of meat products.

Additionally, the term "ultra-processed foods" (UPF) is often misapplied, leading to further confusion. UPFs, as defined by the NOVA classification system, are industrial formulations primarily composed of refined food derivatives such as fats, oils, proteins, starches, and sugars, often combined with additives like emulsifiers, preservatives, and flavor enhancers not commonly used in home cooking. These foods undergo extensive processing that alters their original structure and function[2] (Monteiro et al., 2019). However, it is essential to distinguish UPFs from processed foods, as not all processed foods meet the criteria for ultra-processing. For example, the USDA permits the addition of natural flavors, such as spices and spice extractives, to meat and poultry products, which are declared on labels as "natural flavors" or "flavors"[3] (USDA FSIS). The inclusion of such natural ingredients does not necessarily classify a product as ultra-processed. Clear differentiation between minimally processed, processed, and ultra-processed foods is necessary to prevent misclassification and ensure accurate dietary guidance.

Protein Quality

Not all protein sources are nutritionally equivalent, and this distinction must be emphasized in the dietary guidelines. Animal protein provides more essential amino acids (EAA)—amino acids that the body cannot produce and must obtain from food—for fewer calories compared to plant protein when consumed as part of a mixed meal. This is crucial for supporting protein synthesis throughout the human lifespan, whether during periods of growth and development, maintaining a healthy weight and active lifestyle, or preserving muscle mass to ensure functional independence in aging populations.

Looking more closely at essential amino acids, recent research demonstrates that circulating EAAs are significantly greater after consuming 2 oz-equivalent of lean pork loin or whole scrambled eggs compared to cooked black beans or raw sliced almonds as part of a mixed meal in both younger and older adults[4] (Connelly et al., 2023). Protein foods differ in their energy and nutrient content, including both protein quantity and quality. The protein quality of a food—essentially its EAA content—is a major factor in how the body uses amino acids for muscle and whole-body protein building.

Animal-sourced proteins, such as lean meats, provide high-quality, complete proteins with all essential amino acids in optimal proportions for human health. These proteins are critical for muscle development, cognitive function, and overall health across life stages, particularly in vulnerable populations like children, pregnant women, and the elderly[5,6] (Connolly et al., 2023; Park et al., 2021). In contrast, plant-based proteins, such as beans, lentils, and peas, often lack one or more essential amino acids and have lower digestibility and bioavailability[7,8] (Tso & Forde, 2021; Soh et al., 2024).

Scientific evidence demonstrates that replacing meat with plant-based proteins is not a one-to-one substitution. It is important to note that achieving equivalent protein intake from plant sources often requires consuming larger quantities, which can increase overall calorie intake or unreasonable amounts. For instance:

- A 3-ounce (approximately 85 grams) serving of cooked lean pork provides about 22 grams of high-quality, complete protein. To obtain a similar amount of protein from plant-based sources, one would need to consume approximately 1.5 cups of cooked lentils, as a 1/2 cup serving contains about 9 grams of protein.
- Similarly, a 3-ounce serving of cooked beef offers approximately 26 grams of protein, which would require about 1.5 cups of cooked black beans to match, given that a 1/2 cup serving provides around 8 grams of protein.
- For chicken, a 3-ounce serving delivers about 28 grams of protein, necessitating nearly 2 cups of cooked green peas to equal, as a 1/2 cup serving contains approximately 5 grams of protein.

Animal proteins have higher bioavailability compared to plant-based proteins, allowing the body to digest and utilize their amino acids more efficiently[9] (Gorissen et al., 2018). Plant-based proteins have lower digestibility and are often deficient in essential amino acids like lysine or methionine, reducing their effectiveness in supporting muscle protein synthesis[10] (Binns et al., 2021). Animal protein intake is more effective for lean mass gain than plant protein, particularly in younger adults, due to its superior quality and digestibility[11] (Tang et al., 2021). Protein source and quality are critical factors in dietary planning, particularly for optimizing muscle mass and overall health. Therefore, while it is possible to meet protein needs with plant-based sources, it often requires careful planning and larger quantities of food to achieve the same protein intake and amino acid balance provided by animal proteins. This disparity highlights the efficiency of animal-based proteins in delivering essential amino acids with fewer calories and less food volume, supporting various physiological needs throughout the lifespan.

Micronutrient Contributions of Meat

Meat provides bioavailable micronutrients that are challenging to obtain in adequate amounts from plant-based sources. Heme iron, zinc, and vitamin B12 are abundant in meat and play critical roles in immune function, cognitive development, and energy metabolism[12,13] (Beal et al., 2023; Leroy et al., 2023). The bioavailability of these nutrients in meat far surpasses that of non-heme iron and other plant-derived nutrients, making meat indispensable for meeting the needs of at-risk populations such as women of childbearing age, children, and older adults[14,15] (Adhikari et al., 2022; HHS, 2024).

The proposal to reorder protein subgroups in the Healthy U.S.-Style Dietary Pattern to prioritize plant-based proteins over lean meats lacks sufficient scientific justification[16] (Drewnowski, 2024). Such a change risks reinforcing misconceptions that plant proteins can fully replace animal proteins in terms of nutrient density and bioavailability, thereby increasing the likelihood of nutrient shortfalls in vulnerable populations. Lean meat, including pork, beef, and poultry, are efficient, affordable, and culturally relevant sources of high-quality protein that contribute to balanced and equitable dietary recommendations.

Summary

AMSA strongly encourages the Committee to prioritize clarity, scientific accuracy, and practical applicability in the development of the 2025 Dietary Guidelines for Americans. Clear terminology, evidence-based recognition of animal-derived protein quality, and acknowledgment of meat's unique micronutrient contributions are essential to support positive public health outcomes. Substituting meat with plant-based proteins is not an equivalent trade and could lead to unintended nutritional deficiencies, particularly among at-risk populations.

We urge the Committee to integrate these considerations into its final recommendations and welcome further collaboration. Thank you for the opportunity to provide these comments.

Respectfully submitted,

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References

1. 2025 Dietary Guidelines Advisory Committee. Scientific Report of the 2025 Dietary Guidelines Advisory Committee: Advisory Report to the Secretary of Health and Human Services and Secretary of Agriculture. U.S. Department of Health and Human Services. 2024. https://doi.org/10.52570/DGAC2025.
2. Seman DL, Boler DD, Carr C, et al. Meat Science Lexicon. Meat and Muscle Biology. 2018;2(3). https://doi.org/10.22175/mmb2017.12.0059.
3. Monteiro CA, Cannon G, Levy RB, Moubarac JC, Louzada ML, Rauber F, Khandpur N, Cediel G, Neri D, Martinez-Steele E, Baraldi LG, Jaime PC. Ultra-processed foods: what they are and how to identify them. Public Health Nutr. 2019 Apr;22(5):936-941. doi: 10.1017/S1368980018003762. Epub 2019 Feb 12. PMID: 30744710; PMCID: PMC10260459.
4. USDA _Natural Flavor-- https://www.fsis.usda.gov/food-safety/safe-food-handling-and-preparation/food-safety-basics/natural-flavors-meat-and-poultry. Accessed 1-30-25.
5. Connolly G, Hudson JL, Bergia RE, et al. Effects of consuming ounce-equivalent portions of animal- vs. plant-based protein foods on essential amino acid bioavailability in young and older adults: Two cross-over randomized controlled trials. Nutrients. 2023;15(13):2870.
6. Tso R, Forde CG. Unintended consequences: Nutritional impact and potential pitfalls of switching from animal- to plant-based foods. Nutrients. 2021;13(8):2527.
7. Soh BXP, Smith NW, von Hurst PR, et al. Evaluation of protein adequacy from plant-based dietary scenarios in simulation studies: A narrative review. J Nutr. 2024;154(2):300-313.
8. Agarwal S, McCullough KR, Fulgoni VL 3rd. Nutritional effects of removing a serving of meat or poultry from healthy dietary patterns—a dietary modeling study. Nutrients. 2023;15(7):1717.
9. Gorissen, S. H., Crombag, J. J., Senden, J. M., Waterval, W. H., Bierau, J., Verdijk, L. B., & van Loon, L. J. (2018). Protein content and amino acid composition of commercially available plant-based protein isolates. *Amino Acids, 50*(12), 1685-1695. https://doi.org/10.1007/s00726-018-2640-5
10. Binns, A., Gray, A., Di Brezzo, R., & Burns, S. F. (2021). The effects of plant-based versus animal-based protein intake on muscle mass and strength in healthy adults: A systematic review and meta-analysis. *Nutrients, 13*(5), 1521. https://doi.org/10.3390/nu13051521
11. Tang, J. E., Moore, D. R., Kujbida, G. W., Tarnopolsky, M. A., & Phillips, S. M. (2021). Ingestion of whey hydrolysate, casein, or soy protein isolate: Effects on mixed muscle protein synthesis at rest and following resistance exercise in young men. *Journal of Applied Physiology, 109*(2), 475-482. https://doi.org/10.1152/japplphysiol.00076.2021
12. Beal T, Ortenzi F, Fanzo J. Estimated micronutrient shortfalls of the EAT-Lancet planetary health diet. Lancet Planet Health. 2023;7(3):e233-e237.
13. Leroy F, et al. The role of meat in the human diet: Evolutionary aspects and nutritional value. Anim Front. 2023;13(2):11-18.
14. Adhikari S, Schop M, de Boer IJM, et al. Protein quality in perspective: A review of protein quality metrics and their applications. Nutrients. 2022;14(5):947.
15. National Institute of Health (NIH). Iron Fact Sheet for Health Professionals. 2024. https://ods.od.nih.gov/factsheets/Iron-HealthProfessional/.
16. Drewnowski A. Perspective: The place of pork meat in sustainable healthy diets. Adv Nutr. 2024;15(5):100213.