

Pork: The Underrated Protein Source

Re-examining History, Nutrition, Safety, and Practical Application

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Disclosure

This presentation is sponsored by the Oklahoma Pork Council.
The sponsor reviewed the presentation for factual accuracy.
All interpretations and conclusions are my own and reflect
evidence-based nutrition guidance.

Learning Objectives

By the end of this session, participants will be able to:

- Examine how historical and epidemiologic data shaped pork's reputation
- Evaluate current food safety and production evidence
- Analyze pork's protein quality and micronutrient contribution
- Distinguish fresh from processed pork in clinical discussions
- Integrate pork appropriately within dietary patterns

EVIDENCE AND RISK CONTEXT

Why Revisit Pork Now?

- Evolving food safety guidance
- Changes in commercial production practices
- Ongoing discussions around red and processed meat
- Continued focus on protein quality and nutrient density
- Pattern-based dietary counseling in practice

Historical Context: *Trichinella* & Early Messaging

- *Trichinella spiralis* historically linked to undercooked pork
- Earlier agricultural systems differed from modern commercial systems
- “Cook thoroughly” guidance became entrenched

Modern Commercial Production

- Modern commercial pork production systems incorporate controlled management and biosecurity practices¹
- These measures reduce parasite transmission risk within commercial herds¹
- National surveillance data demonstrate negligible *Trichinella* prevalence in sampled commercial populations²

Current Food Safety Guidance

- Whole cuts of pork: 145°F + 3-minute rest
- Ground pork: 160°F
- Reflects updated risk assessment

Red and Processed Meat: Understanding the IARC Classification

- Processed meat classified as Group 1 (carcinogenic to humans)
- Red meat classified as Group 2A (probably carcinogenic to humans)
- Classification reflects strength of evidence, not magnitude of risk
- Associations are dose-dependent
- Distinguishing fresh from processed products is clinically important

Interpreting Risk in Context

- Observed associations are based primarily on epidemiologic data¹
- Absolute risk increases vary by intake level¹
- Overall dietary pattern influences risk interpretation²
- Fiber intake and lifestyle factors may modify colorectal cancer risk²
- Clinical counseling should emphasize pattern-based guidance

International Agency for Research on Cancer (IARC). *Red Meat and Processed Meat*. IARC Monogr Eval Carcinog Risks Hum. 2015;114.

US Department of Health and Human Services & US Department of Agriculture. *Dietary Guidelines for Americans*

PROTEIN QUALITY & NUTRIENT PROFILE

What Defines Protein Quality?

- Essential amino acid profile
- Digestibility
- Bioavailability

PDCAAS Overview

- Score 0–1.0
- Accounts for limiting amino acid + digestibility
- Animal proteins score at or near 1.0

PDCAAS Comparison

SOURCE	APPROXIMATE PDCAAS
Pork	~1.0
Beef	~0.9–1.0
Chicken	~0.9–1.0
Soy isolate	~1.0
Beans	~0.6–0.8

DIAAS: Emerging Protein Quality Evaluation Method

- Proposed by FAO in 2013 as an alternative to PDCAAS¹
- Measures ileal digestibility of individual indispensable amino acids¹
- Not yet universally adopted in dietary guidance
- Many animal-source proteins demonstrate high digestible indispensable amino acid scores in published analyses

¹ Food and Agriculture Organization of the United Nations.
Dietary Protein Quality Evaluation in Human Nutrition. FAO
Food Nutr Pap No. 92. Rome; 2013.

Leucine & Muscle Protein Synthesis

- ~2 g leucine per 3 oz serving (varies by cut)
- Relevant for aging and recovery

Nutrient Profile: 3 oz Pork Tenderloin

- ~22 g protein
- ~3 g fat
- ~60% DV thiamin
- ~40% DV vitamin B6
- Source of zinc and selenium

Contribution to U.S. Nutrient Intake

Dietary intake analyses indicate pork contributes to:

- Thiamin intake
- Niacin intake
- Zinc intake
- Total protein intake

Lean Cuts & Fat Context

- Fat content varies by cut
- Comparable to other lean animal proteins when trimmed
- Preparation influences final profile

CLINICAL APPLICATION & DIETARY GUIDANCE

Fresh vs. Processed Pork

FRESH:

- Single-ingredient muscle meat

PROCESSED:

- Cured, smoked, salted, preserved
- Epidemiologic associations largely involve processed meats

Pork Within Dietary Patterns

- Included within the Protein Foods Group¹
- Emphasis on lean options within dietary patterns¹
- Guidance focuses on overall dietary pattern rather than single foods¹
- Saturated fat intake remains a population-level consideration¹

Cultural & Culinary Context

- Latin American cuisines
- Asian cuisines
- European traditions
- Southern U.S.

Affordability & Accessibility

- Widely available year-round
- Retail prices vary by cut
- Competitive cost per gram of protein

Translating Evidence Into Practice

- Differentiate fresh muscle meats from processed products when discussing risk
- Frame red meat intake within overall dietary pattern and saturated fat goals¹
- Consider protein distribution, adequacy, and nutrient density
- Incorporate cultural food traditions into individualized counseling
- Avoid single-food messaging; emphasize pattern-based guidance

¹ U.S. Department of Health and Human Services & U.S. Department of Agriculture. *Dietary Guidelines for Americans, 2020–2025.*

Key Clinical Takeaways

- Historical messaging and modern evidence differ
- Distinguishing fresh from processed products is essential for accurate risk communication¹
- Fresh lean pork provides high-quality protein and key micronutrients
- Dietary recommendations should reflect overall pattern, portion, and preparation¹
- Clinical counseling benefits from nuance, not simplification

References

- Centers for Disease Control and Prevention. *Trichinellosis surveillance — United States*.
- Pozio E, Gomez Morales MA, Dupouy-Camet J. Control of *Trichinella* in modern pork production systems. *Pathogens*. 2022;11(8):903. doi:10.3390/pathogens11080903
- US Department of Agriculture, Agricultural Research Service. *USDA research documents absence of Trichinella infection in commercial pigs*. 2024.
- US Department of Agriculture, Food Safety and Inspection Service. *Safe minimum internal temperature chart*.
- International Agency for Research on Cancer. *Red meat and processed meat*. IARC Monogr Eval Carcinog Risks Hum. 2015;114.
- Food and Agriculture Organization of the United Nations/World Health Organization. *Protein quality evaluation: report of the Joint FAO/WHO Expert Consultation*. FAO Food Nutr Pap No. 51. Rome, Italy: FAO; 1991.
- Food and Agriculture Organization of the United Nations. *Dietary protein quality evaluation in human nutrition: report of an FAO Expert Consultation*. FAO Food Nutr Pap No. 92. Rome, Italy: FAO; 2013.
- US Department of Agriculture, Agricultural Research Service. *FoodData Central*.
- Phillips SM. The impact of protein quality on muscle protein synthesis. *J Nutr*. 2016;146(3):S.
- O’Neil CE, Fulgoni VL, Nicklas TA. Nutritional contribution of pork to the US diet. *Nutrients*. 2012;4(7):ePub.
- US Department of Health and Human Services; US Department of Agriculture. *Dietary Guidelines for Americans, 2020–2025*. 9th ed. December 2020.
- US Bureau of Labor Statistics. *Average retail food prices*.
- US Department of Agriculture, Economic Research Service. *Food price outlook and retail price comparisons*.