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BIOLOGICAL HAZARDS AND ZOONOSES ASSOCIATED WITH WILD BOAR (*SUS SCROFA*) MEAT: A CURRENT REVIEW

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Abstract: Expanding wild boar (*Sus scrofa*) populations have significantly increased game meat consumption, yet this species acts as a major reservoir for zoonotic pathogens. This review synthesizes current epidemiological literature, diagnostic methods, and surveillance data (2010–2026) regarding biological hazards in the wild boar meat chain. Parasitic risks are dominated by *Trichinella* spp. (including cold-tolerant *T. britovi*) and *Toxoplasma gondii*. Bacterial hazards encompass systemic zoonoses (*Brucella suis*, *Mycobacterium* spp.) and secondary enteric contaminants (*Salmonella*, STEC) linked to delayed evisceration. Additionally, hepatitis E virus represents an emerging threat via undercooked liver and meat. Critical mitigation relies on mandatory artificial digestion, field evisceration within 2–3 hours, and core cooking temperatures exceeding 71°C within an integrated One Health framework.

• Introduction

- European wild boar (*Sus scrofa*) populations have surged, establishing game meat as a popular, sustainable, and free-range food resource.
- Valued by consumers for its low intramuscular fat, high biological value protein, and favorable fatty acid profile (PUFA/SFA ratio).
- Unlike domestic swine raised under controlled farm biosecurity, free-ranging wildlife undergoes no ante-mortem inspection and acts as a reservoir for major zoonoses.

• Material and method

- Databases Screened: PubMed, Web of Science, Scopus, and Google Scholar (peer-reviewed studies published between 2010 and 2026).
- Technical reports from the European Food Safety Authority (EFSA), ECDC, and the World Organisation for Animal Health (WOAH).
- Key Search Descriptors: *"Sus scrofa"*, *"wild boar meat"*, *"foodborne zoonoses"*, *"Trichinella britovi"*, *"Toxoplasma gondii"*, *"Hepatitis E virus"*, *"field evisceration hygiene"*.
- Evaluation Framework: Hazard categorization based on:
  - European prevalence and persistence in muscle/visceral tissue.
  - Clinical severity of human foodborne infection.
  - Sensitivity and regulatory status of post-mortem diagnostic methods.
  - Physical/thermal tolerance and inactivation parameters.

• Results

Hazard	Target Pathogen(s)	Main Risk & Control Key
Parasitic	***Trichinella* spp.** ***Toxoplasma gondii***	• Severe myalgia; T. britovi is **freeze-tolerant**. • Requires **magnetic stirrer digestion** & cooking >71°C.
Bacterial	***Salmonella, STEC*** ***Brucella suis biovar 2***	• Enteric spillover from gut shots/delayed dressing. • Field evisceration within **<2–3 h**; hygiene training.
Viral	**Hepatitis E Virus (HEV)**	• Acute hepatitis via raw liver & dry-cured sausages. • Resistant to cold smoking; requires thermal cooking.

• Conclusions

Wild boar meat offers high nutritional value, but poses critical zoonotic risks (*Trichinella*, HEV, STEC). Ensuring food safety requires mandatory artificial digestion testing, rapid evisceration (<2–3 h), hunter hygiene training, and thorough cooking (>71°C) within a One Health framework.

