FEED THE FUTURE
The U.S. Government's Global Hunger & Food Security Initiative

The Importance of
Consuming Safe Animal-Source Foods

Animal-source foods (ASF; milk, meat, and eggs) contain nutrients commonly lacking in the diets of the poor and vulnerable, yet they are essential for cognitive and physical growth. Additional research and continued interventions across the value chain are needed to improve ASF safety and ensure the nutritional benefits from these foods.

RISKS

FOODBORNE DISEASE

is the result of consuming contaminated foods. Contamination can occur at any stage in the process from food production to consumption.[1]

Example: Consuming raw milk contaminated with bacteria, such as *Salmonella* and *Campylobacter*, may cause illness.

ENVIRONMENTAL ENTERIC DYSFUNCTION

(EED) is gut inflammation and reduced absorptive capacity and function in the small intestine leading to reduced ability to absorb nutrients. The causal agent usually is pathogens ingested through hand-to-mouth contact and unhygienic diets.[4,5]

Example: Children in households with backyard poultry may develop EED from touching and ingesting feces.

MYCOTOXINS

are toxic chemicals produced by fungi, which can be present in feeds and pass to ASF through animal product consumption, particularly through milk and animal blood.[9]

Example: Dairy animals that consume aflatoxin B1 in feeds secrete aflatoxin M1 in milk. Ochratoxin A, another type of mycotoxin, accumulates in animal blood and pork.[9]

FACTS

41% of the global population lives in the poorest areas of the world and suffers from…[2]

of all foodborne illnesses,

of all foodborne illness-related deaths, and

of all foodborne-related disability-adjusted life years, with children under 5 at high risk.

Factors cited to be associated with EED include:[6,7,8]

Poor sanitation

Low income

Feco-oral transmission from animal feces

Recent research shows that, in children, EED can:[8]
increase the risk of infections, and
reduce the efficacy of oral vaccines

Factors ***increasing*** mycotoxins in feeds can include:[9]

Climate factors (e.g., temperature changes or drought)

Environmental factors (e.g., insect and pest infestation of crops)

Management practices (e.g., poor feed storage or using moldy feeds)

REDUCING THE RISK

INTERVENTIONS
- Practice general food hygiene, handling, and processing.[3]
- Cook and store foods at safe temperatures.[3]

FUTURE RESEARCH
- Conduct surveys on foodborne disease incidence in low-income countries.[2,13]
- Evaluate the effects on malnutrition and stunting.[2]
- Quantify the full societal impact and study the economic burden of foodborne diseases.[2]

INTERVENTIONS
- Keep household compounds clean of animal feces.[8]
- Create clean play and infant feeding environments.[8]
- Keep poultry in enclosures to separate them from children.[6]

FUTURE RESEARCH
- Investigate the relationship between enteric infections and malnutrition.[2]
- Explore the contribution of livestock to the incidence of enteric infections in low-resource settings.[2]
- Conduct animal husbandry interventions to determine their effect on EED.[2]

INTERVENTIONS
- Dry and store feeds in cool, dry, pest free conditions.[9]
- Do not feed livestock moldy feeds.[10]
- Diversify diets to reduce mycotoxin concentration.[9]
- Educate farmers on good agricultural practices.[9]

FUTURE RESEARCH
- Develop mycotoxin sampling methods to screen for contamination prior to processing or consumption.[11]
- Breed crops for increased disease and pest tolerance.[11]

Feed the Future Innovation Lab for Livestock Systems
Based on the 2017 Global Nutrition Symposium presentations, available at http://livestocklab.ifas.ufl.edu

Sources: 1. WHO, Foodborne diseases, available at: www.who.int | 2. Havelaar, 2017, Global Nutrition Symposium presentation | 3. WHO, 2006, Five keys to safer food manual | 4. Crane, Jones, & Berkley, 2015 | 5. Ngure, Reid, Humphrey, Mbuya, Pelto, & Stoltzfus, 2014 | 6. Headey & Hirvonen, 2016 | 7. Crane et al., 2015, doi: 10.1177/1564826515036151113 | 8. Mbuya & Humphrey, 2015 | 9. Wu, 2017, Global Nutrition Symposium presentation | 10. Nishimwe, Ayabagabo, Habimana, Mutiga, Bowers, & Maier, 2017, Iowa State University poster | 11. Kumar, Basu, & Rajendran, 2007 | 12. Hald et al., 2016, doi: 10.1371/journal.pone.0145839

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