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Transmission of enteric viruses through meat products?

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Abstract

Until recently, the contribution of viruses to foodborne disease associated with the consumption of meat has largely been overlooked and underappreciated. However, enteric viruses are responsible for the majority of foodborne disease outbreaks worldwide and are often suspected when the causative agent is unknown or cannot be identified. Swine hepatitis E virus (HEV) is widespread in herds, and swine strains are genetically related to human HEV. The zoonotic transmission of HEV has been demonstrated through the consumption of raw and undercooked pork and pork liver products. Studies in the US have shown that upto 11% of pork livers are naturally contaminated with HEV RNA and that the HEV remains infectious. Furthermore there are increasing concerns about the zoonotic transmission of norovirus and rotavirus (RV) due to increasing evidence of the existence of animal strains that are closely related to human strains but there is no documented evidence of zoonotic transmission. In addition to contamination during meat processing operations, contamination of meat products is also possible as a result of poor personal hygiene from infected food handlers. Enteric viruses are extremely stable at low temperatures on raw meat. In a recent study, 18% of beef primals were positive for viable F-RNAcoliphages associated with human origin while RV RNA was detected in 4% of samples. Although it is not known if the RV particles were infectious, the presence of viable F-RNA coliphages (a potential indicator for enteric viruses) suggests that consumers could potentially be at risk when consuming undercooked meat that is contaminated with enteric viruses.

Biography

Dr. Tineke H. Jones (Ph. D. University of Alberta) has extensive experience in meat microbiology with Agriculture and Agri-Food Canada. Her research focuses on the detection of recognized and emerging foodborne pathogens of zoonotic and human origin in foods and water, determining their point of entry and their survival or inactivation in the food chain and watersheds impacted by agricultural activities. She is a member of the editorial board of the International Journal of Food Microbiology and the management board of the Alberta Meat Network. She belongs to the Canadian Meat Science Association, the International Association for Food Protection and the International Society of Food and Environmental Virology. She has published 43 peer reviewed articles and 3 book chapters in food safety.