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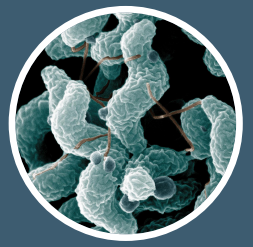
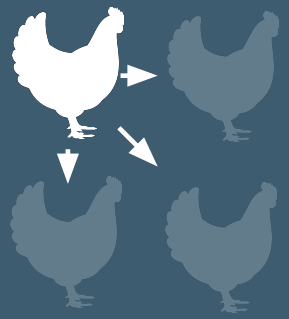
SECURITY THROUGH SCIENCE®

Campylobacter: Impact and Mitigation

What is Campylobacter's Impact on Food Producers?

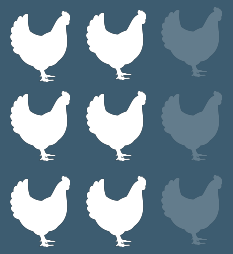


Campylobacter infections in humans, campylobacteriosis, are a zoonosis and the most frequent cause of food-borne bacterial enteritis in humans. Despite extensive colonization in the intestinal tract, Campylobacter infection produces little or no clinical disease in poultry.



Rapid spread

Once the first bird in a flock becomes colonized, infection spreads to the entire flock in just a few days. This rapid spread of Campylobacter throughout the flock is a result of high levels of shedding and efficient fecal-oral transmission compounded by communal water and feed.



Persistence

Once chickens and turkeys become infected, Campylobacter colonization of the intestinal tract persists until slaughter, leading to carcass contamination at the processing plant. Up to 100 % of broilers at slaughter-age may harbor the organism.

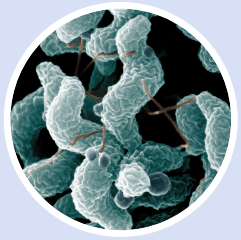
Impact

Virtually all (99%) cases in humans occur as isolated, sporadic events, not as part of recognized outbreaks, and many cases go undiagnosed or unreported (EFSA, 2016).

In the United States, the Center for Disease Control and Prevention (CDC) reports an estimated 2.1 to 2.4 million cases of human campylobacter- iosis (illnesses ranging from loose stools to dysentery) each year.

Another report estimates an economic burden from health losses due to this pathogen at $1.56 billion (Scharff, 2012).

How Can Campylobacter be Mitigated?



The prevalence of *Campylobacter* on poultry carcasses at the end of the processing line (post-chill) is usually over 50% and varies between 0% and 100% worldwide. Reducing the *Campylobacter* load at the farm level and reducing contamination at slaughter is therefore important to prevent transmission to humans[1].

Temperature

Freezing contaminated poultry carcasses is a reliable intervention to achieve a 2-log reduction of Campylobacter counts.

Another temperature-related intervention is a combination of steam with ultrasound (Sonosteam®), which significantly reduced Campylobacter-positive carcasses in a commercial abattoir (Musavian, Krebs, Nonboe, Corry, & Purnell, 2014).

However, it is difficult to significantly reduce numbers of Campylobacter spp. on broiler carcasses without causing organoleptic damage.

Irradiation

Irradiation is one of the most effective means to reduce Campylobacter contamination on carcasses.

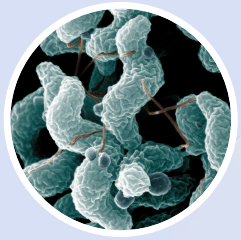
Although it has minimal effect on sensory characteristics of the final poultry product, acceptance of this practice is low (EFSA, 2011).

Chemical treatments

To reduce microbial contamination and limit microbial cross-contamination, chlorine, chlorine dioxide, acidified sodium chlorite, trisodium phosphate and peroxyacid are used in poultry processing, either as spray or wash for online re-processing, or in the chill water tank.

1 Hansson, 2007.

Why Controlling Campylobacter Requires a Holistic Approach



Campylobacter is ubiquitous in the poultry farm environment, and the sources of flock infection and risk factors influencing Campylobacter introduction are complex. Overall, horizontal transmission from environmental sources is the primary way flocks become colonized.

Potential sources of flock infection include old litter, untreated drinking water, wild birds, other farm animals, domestic pets, wildlife species, insects, equipment and transport vehicles, and farm workers.

14 days

Data has shown that some strains of Campylobacter can survive in a dry media for up to 14 days.

5 days

A recent study (Alves et al) has shown that Campylobacter can survive in feed up to 5 days (time limit of study) and may even increase in numbers over time.