Prepared for AHD by: LWT Animal Nutrition Ltd - Research - Commercial - Scientific

Credence for controlling *Campylobacter spp.* in poultry

Campylobacter infections remain a major problem to the poultry industry in NZ, with media focus on the infection of poultry meat and the risk to human consumers. The risk of infection via drinking water in poultry drinking systems is increasing where water is sourced from untreated sources, especially bores, rivers and roof collection, due to increasing nitrogen and other nutrient levels in soils, especially during hot weather.

High ambient temperatures, especially where water is kept in storage tanks, maximises the potential for pathogen growth.

Public health studies show clearly that *Campylobacter* infection in humans peak during summer months (Meldrum, 2005; Louis *et al.,* 2005). For every 1°C increase in ambient temperature, infection cases in humans rise by 15% (Tam *et al.*, 2006). In addition, from a tank sampling trial conducted in NZ, Simmons *et al.* (2001) found *Salmonella, E.coli, Enterococci, Aeromonas, Cryptosporidia, Giardia* and *Legionella spp.*

Water pipes in poultry houses have multiple joints and elbows which provide ideal locations for biofilm build up, which is a primary reservoir for *Campylobacter spp.* Major hazard points for introduction of *Campylobacter* infection includes thinning and depopulation (due to personnel from other farms) and vehicles, including transport of birds to slaughter plants (Adkin, 2006).

Using an effective water sanitiser and disinfection program is essential in the control of such infections, protecting the animals, increasing performance and profitability and to protect human consumers. All drinking water lines must be flushed out regularly, and all water used on farms, whether used for drinking, cleaning feeding and other equipment or washing down, should be sanitiser with a broad spectrum and effective product.

Credence is a stabilised chlorine product, which is effective against pathogenic bacteria, algae, fungi, viruses (including avian influenza) and protozoa. It has excellent penetration in biofilms in pipelines and is less corrosive compared to other popular disinfection products. In stored water, it persists for up to three months, depending on water usage.

On-farm trials conducted in large units in NZ have shown Credence to be effective in controlling *Campylobacter* contamination and regulate pH in the drinking water, which is important for gut health and enzyme activation for nutrient digestion. A modern broiler facility in Auckland, with standard biosecurity on site, was used for sampling. A total of 36,200 birds were in each shed, and the trial compared the current chlorine dioxide (0.35 ppm) drinking water treatment (positive control) with Credence (0.3 ppm). Farm characterised as ‘average/good’ in terms of management.

Parameter	Chlorine dioxide shed 1	Credence shed 2
Water pH	8.4	7.8
Incoming water pre-treatment TVC	11	245
Incoming water total coliforms	2	<1

Key findings

- Credence was equally as effective at controlling *Campylobacter* presence in the water, with none detected in the shed until first thinning.
- There was 22% lower mortality at 7 d and 14% lower mortality at slaughter for birds receiving water treated with Credence compared to chlorine dioxide flock.
- Variable total viable counts in supply water before treatment) on farm, the shed with Credence being higher than shed with chlorine dioxide, yet faecal coliforms <1 for Credence relative to chlorine dioxide at log 2.
- pH was maintained at correct levels for poultry with Credence (7.8) compared to chlorine dioxide (8.4) which, relative to poultry standards (max 8), increased water pH above the maximum recommended levels.
- Campylobacter found in both sheds in droppings in shed during thinning of the flock by outside personnel at around 30 days of age, hence biosecurity for visiting staff needs to be urgently addressed. Credence can be used in increasing concentrations for disinfection of staff, vehicles and equipment.