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TITLE

TREATMENT OF CLINICAL BRACHYSPIRA HYODYSENTERIAE INFECTIONS WITH CHELATED ZINC IN A PIG INFECTION MODEL AND UNDER FIELD CONDITIONS.

Gerwen Lammers¹, Robbert van Berkel¹, Daisy Roijackers¹, Carly Vuldere¹, Peter van der Wolf², Henriette Brouwer-Middelesch², Karin Junker², Jobke van Hout²

¹ *Intracare BV*

² *GD Animal Health*

CONTENT

Background and Objectives Due to antimicrobial resistance and zinc oxide related ecotoxicity, there is a need for new, effective intervention methods to improve animal health and welfare, and to reduce economic losses resulting from swine dysentery. The goal of this study was to evaluate the effect of low levels of a novel zinc chelate on the clinical signs, pathology, and shedding of *Brachyspira hyodysenteriae* (BHYO) in a pig infection model and under field conditions. **Material & Methods** Two pens with 4 boars were inoculated with BHYO and subsequently received either feed containing product, or control feed for 9 consecutive days. In a randomised controlled GCP trial on 2 commercial farms experiencing swine dysentery, 58 BHYO-positive pigs from 16 different pens received drinking water containing either product, or placebo for 6 consecutive days. In both studies, faeces were scored for shape, consistency, colour, and additions and analysed for the presence of BHYO by PCR. Post-mortem analysis of dead animals included macro- and microscopic evaluation of the colon. **Results** In both studies treatment positively affected faecal quality, clinical signs and daily growth. At the last treatment day, BHYO was not detectable in the faeces of any of the treated animals, while all controls remained BHYO positive. All treated animals recovered, while 6 controls had to be euthanized/were found dead and 12 controls required additional treatment before end of study. Post-mortem macro- and microscopic evaluation of cured, inoculated animals showed normal colons without abnormalities, recovery of the colon wall and the absence of spirochetes, while untreated controls showed swelling, inflammation, abnormal thick wall, cell necrosis, and the presence of spirochetes. **Discussion & Conclusion** Dosed at environmental-friendly levels through the feed or drinking water, a novel non-antibiotic treatment ceases the clinical signs and shedding of BHYO in both experimentally and naturally infected pigs.