



## BACTERIAL DISEASES

BBD-007

### REDUCED ANTIMICROBIAL RESISTANCE IN WEANER PIGS TREATED WITH DETACH® FOLLOWING NATURAL CHALLENGE WITH F4 *E.coli*

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Aminoglycosides and zinc oxide (ZnO) can prevent post-weaning diarrhoea (PWD) caused by Enterotoxigenic *E.coli* (ETEC), but their use can lead to antimicrobial resistance (AMR). Bromelain also protects pigs from PWD, but is not bactericidal. It inactivates host receptors, thereby preventing ETEC colonisation, and inhibits fluid secretion by toxins. This study tested the hypothesis that bromelain (formulated as Detach® 125mg/4mL) could control PWD without increasing AMR in *E.coli*.

Seventy-two pigs were selected from 9 high-health gilt litters and randomly allocated into four groups at weaning (Day 0; two piglets from each litter, n=18 per group); Detach® (oral on D-1 and D6), ZnO (2,500 ppm in feed, D7 to D19), neomycin sulphate (NS; 8mg/kg bw in feed, D7 to D19) or Controls (unmedicated). Four faecal *E.coli* isolates from each pig on Day 6, Day 19 and Day 39 were tested for AMR to 7 commonly used antibiotics. Differences in proportions of resistant *E.coli* between groups were analysed by logistic regression. Numbers of F4 ETEC were also quantified. Weight gains were recorded weekly.

A median of 280 F4 ETEC were detected on D6 across all pigs, with a significantly higher proportion in Controls relative to NS pigs ( $P=0.042$ ). At Day 6, *E.coli* AMR was not significantly different between groups, but by D19 *E.coli* from bromelain and ZO pigs had reduced AMR to tetracycline, sulphamethoxazole/trimethoprim (TMS) and lincospectin relative to neomycin and Control pigs ( $P<0.001$ ). Neomycin resistance was also higher in NS pigs ( $P=0.001$ ), and two NS-treated pigs died. At Day 39, pigs previously treated with ZnO had significantly increased resistance to lincomycin ( $P=0.022$ ) and tetracycline relative to all other groups ( $P<0.001$ ). Bromelain did not increase growth (D7-D39; NS, 23.13<sup>a</sup> kg; ZnO, 22.02<sup>c</sup> kg; Detach, 21.07<sup>b</sup> kg and Control, 22.77<sup>c</sup> kg ( $P<0.05$ ), but bromelain was effective in diarrhoea control without inducing AMR in *E.coli*.