

NOVEL IMMUNE MODULATION TO IMPROVE REPRODUCTIVE OUTCOMES IN PIGS

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Early embryonic mortality is a major factor limiting litter size and profitability in the pig industry. Pregnancy success requires an immunologically receptive reproductive tract, generated in response to exposure to immune modulating factors in the seminal plasma (SP). Both the short-term pro-inflammatory response of the endometrium to SP and to a novel immune-modulating product, mycobacterial cell wall extract (MCWE; 'Equimune', Bioniche Animal Health) and the reproductive outcomes from a large-scale farrowing trial are described. In the first experiment, 15 Large White gilts (24 weeks of age) were randomly allocated to three intrauterine treatments administered at onset of gonadotrophin-induced oestrus: (1) 80 mL PBS (control); (2) 80 mL SP; or (3) 80 mL PBS containing 500 µg MCWE. Gilts were slaughtered 32–34 h later and reproductive tracts retrieved. Luminal fluid leukocytes were assessed following fixation using DIFF-Quik stain, and indicated the proportion of lymphocytes increased with SP and MCWE treatment compared to the control group (14.0% and 17.0% v. 9.3%; $P < 0.05$), and the proportion of monocytes decreased (12.3% and 15.0% v. 25.0%; $P < 0.05$). In the second experiment, Large White or Large White/Landrace crossbred females ($n = 161$) were artificially inseminated twice, following standard industry practice, after detection of standing oestrus. Stratified for parity and breed, each was allocated to a treatment group: (a) Control: standard AI dose 1st and 2nd insemination; (b) 500 µg MCWE added to 2nd insemination; or (c) 500 µg MCWE included in the 1st and 2nd insemination. The overall pregnancy rate was 91%, with no significant effect of treatment on litter size, average piglet bodyweight at birth or litter variability. Although the use of MCWE at the time of AI did not improve reproductive outcome, significant potential remains in utilising its immune stimulating properties in 'priming' the reproductive tract, followed by mating at the next oestrus. This approach may improve gilt farrowing rates, thus increase overall herd productivity and efficiency.