Vaccination of farmed red deer (*Cervus elaphus*) against Yersiniosis

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Yersiniosis, characterised by diarrhoea, dehydration and sudden death, commonly affects young farmed red deer (*Cervus elaphus*) in their first winter. It is caused by *Yersinia pseudotuberculosis* (*Y. pstb*) serotypes I, II and III. The majority of deer develop subclinical infections, but disease is precipitated by stress and outbreaks commonly affect up to 20% of a group. Minimising stress, adequate nutrition and provision of shelter can help to prevent yersiniosis (Mackintosh, 1990). A vaccine, Yersiniavax (AgVax Development, PO Box 40882, Upper Hutt, NZ), has been developed as an adjunct to good management.

A series of vaccine trials were conducted between 1989 and 1991. A stress/challenge protocol to reproduce yersiniosis was developed, whereby red deer weaners received an oral challenge of around 10^{10} live virulent *Y. pstb* following a 24-hour period of farm stressors which included yarding, fasting, weighing, sampling and transport in a truck. In 1989, half of a group of 139 weaners received a single dose of an oil-adjuvanted killed multistrain *Y. pstb* vaccine 8 weeks prior to the experimental stress/challenge of the whole group. The vaccine gave significant protection ($P<0.05$) against yersiniosis (54% unvaccinated versus 31% vaccinated) in the face of severe challenge. In 1990, 96 weaners were allocated to three equal groups; A received two doses, three weeks apart, of an oil adjuvanted *Y. pstb* vaccine; B received two doses, three weeks apart, of a DEAE dextran *Y. pstb* vaccine; C were unvaccinated controls. Three weeks after the second dose of vaccine they received the 24-hour stress protocol (as above). The next day they received an oral challenge of around 10^{10} live virulent *Y. pstb* serotype I. Clinical yersiniosis occurred in 26%, 33% and 60% of group A, B and C animals respectively. Both vaccines (A & B) gave significant protection ($P<0.05$) and there was no difference between them. In 1991, a field trial of Yersiniavax, a DEAE-adjuvanted killed multistrain *Y. pstb* vaccine, was conducted (Mackintosh *et al*, 1992). This involved a total of 4,958 calves on 17 "high risk" farms (i.e. with previous outbreaks) on which half of each mob received two doses of vaccine 3 to 7 weeks apart in autumn. Outbreaks of yersiniosis occurred in three mobs (outbreak A: 33 deaths (22%) in unvaccinated calves and 10 (6.7%) in vaccinated calves ($P<0.01$); B: 55 deaths (21%) in unvaccinated and 3 (1%) in vaccinated calves ($P<0.001$); C: outbreak occurred 2 weeks after the first dose of vaccine and 22 (14.5%) cases occurred in the unvaccinated group versus 13 (8.5%) cases in the vaccinated group (N.S.). The vaccine produced a localised hard lump at the injection site which was negligible in 5 to 6 weeks.

It was concluded that Yersiniavax is safe and that two doses give significant protection against yersiniosis.

REFERENCES

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