

In association with



DEVELOPMENT OF A BOCOV VACCINE

This month we highlight a recent research initiative in relation to a bovine coronavirus (BoCoV) vaccine study

Bovine coronavirus (BoCoV) is a pneumoenteric pathogen that causes winter dysentery, calf diarrhoea and is one of several pathogens associated with the bovine respiratory disease complex. Inactivated virus and a recently developed modified live virus vaccine are administered to protect against disease, but the vaccine strains and natural isolates are highly divergent so protection afforded by the vaccine may be suboptimal. Phylogenetic analysis of natural isolates also demonstrated divergence based on location suggesting different regions may require location-specific vaccines. This study focused on natural isolates of BoCoV from Ireland to genetically characterise the virus and design an Ireland-specific vaccine.

Selective pressure analysis and prediction of immune epitopes were also performed to identify proteins recognised

Research team

Tristan Russell PhD, UCD School of Veterinary Medicine
 Jose Maria Lozano PhD, veterinary research officer, Department of Agriculture, Food and Marine, Backweston Laboratories, Kildare; Cailyn Challinor, UCD School of Veterinary Medicine
 Gerald Barry BA MSc PhD, lecturer in UCD School of Veterinary Medicine.

by the immune response. Genes with a high prevalence of diversifying selection are more likely to be recognised by the immune response because there would be a selective advantage for amino acid changes that enable immune escape. Of the five structural proteins analysed, spike and haemagglutinin esterase (HE) were under increased diversifying selection, and these two proteins also contained more predicted immune epitopes. As such, mRNA vaccines expressing BoCoV spike and HE were developed. Irish isolates were collected during 2022 and 2023 and their spike and HE genes sequenced. These sequences were used to design mRNA vaccines, which expressed proteins representative of BoCoV currently circulating in Ireland. Conventional mRNA vaccines were generated and tested to determine their functionality. Attempts were also made to generate self-amplifying mRNA vaccines by inserting spike and HE genes downstream of the Semliki Forest virus replicase. This work demonstrated how surveillance of currently circulating animal viruses and targeted sequencing of immunogenic proteins can be used to quickly develop or update a vaccine.



Tullow, Co Carlow

LICENSED WHOLESALERS OF VETERINARY MEDICINES

Partnership Programme Presents

***TRICHOBEN (Ringworm) Lyophilisate and solvent for preparation of injection suspension for cattle. Withdrawal period - Meat -14 days**



FOR BOTH THE PREVENTION AND TREATMENT OF BOVINE TRICHOPHYTOSIS.
 5 x (10ml - 5 Dose) and 40ml/20 Dose.

*These were imported under Special Licence issued by the Department of Agriculture, Food and the Marine.

BLOATENZ (BLOAT)

Helps maintain normal gut function in cattle grazing lush pasture or clover pasture. For the treatment of Bloat, a digestive disorder of ruminant animals and occurs when trapped fermentation gas causes distention of the rumen and reticulum. Bloatenz is a unique product, is the only product of its kind on the market available from Animal Health Distributors in 5 LTR and 25LTR drums.



For further details contact: Tony Fleming: tfleming@cahg.ie Call: 087 230 2034
 or: Breda Meehan: bmeehan@cahg.ie Call: 087 687 5025 or: Steve Martin Call: 086 770 3502