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The Hunt for Maedi Visna Resistance: Understanding the Current TMEM154 Genetic Situation within the UK National Flock

Content

MV is a chronic viral disease affecting nearly 10% of the UK national flock. Its long latency period which ultimately ends in fatality in conjunction with the lack of treatment or vaccination options make control efforts difficult. Current strategies rely on voluntary testing and culling, which are costly and not widely effective. Selective breeding for genetic resistance therefore offers an alternative. Studies have identified a mutation in Transmembrane protein 154 (TMEM154) to be strongly associated with decreased risk of MV. Prior to implementing a selective breeding programme, there are several questions requiring answers such as do the resistant genetics have adverse effects on animal welfare and what resistant genetics are currently present within the UK flock. The latter of these is addressed in the current work.

Animals from major UK sheep breeds were genotyped to assess allele frequency and determine the prevalence of MV resistance. A minimum of 20 animals per breed from diverse bloodlines were tested to ensure accurate breed representation at a national level.

Data from 35 UK sheep breeds showed a wide range (3-90%) of animals homozygous for MV resistance. No breed lacked resistance, supporting selective breeding for this trait in UK breeds. The variation in prevalence suggests breed-specific approaches would be necessary to avoid genetic bottlenecks and loss of valuable genetics.

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Maedi-Visna, Genetic Resistance, Sheep, Small Ruminant Lentiviruses

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