

Genetic and epidemiological analysis of BRSV strains that circulate in the Wallonia region of Belgium

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Bovine respiratory syncytial virus (BRSV) is a virus belonging to the genus *Orthopneumovirus*, within the *Pneumoviridae* family (ICTV, 2020). BRSV is a major cause of bovine respiratory disease complex (BRD) as well as regular winter outbreaks of respiratory disease in cattle and is therefore responsible for important economic losses on the farming industry. The BRSV contains 11 viral proteins, among which the attachment glycoprotein (G). Displaying the highest reported mutation rate among BRSV strains, the G gene is commonly used as target during phylogenetic analysis and BRSV is classified to date into ten different subgroups (I to X). Recent studies achieved in different countries (Italy, Croatia and more recently Brasil and Japan) reported the circulation of new, genetically unique BRSV strains (groups VII to X) with mutations within essential immunodominant region. In this study, the genetic diversity of circulating BRSV strains in Belgium, which is unknown since end of 1990's, was investigated. Interestingly, our phylogenetic analyses revealed emergence and circulation of BRSV strains belonging to subgroup VIII, as observed elsewhere in Europe. The spatiotemporal distribution of BRSV isolates has been studied in different countries and should continue, as establishment of molecular surveillance of BRSV in different geographical regions can improve the identification of outbreaks, resulting in the implementation of preventive measures aimed to control the disease. Correlation between BRSV isolates circulating in Belgium and epidemiologic features like age, cattle breed, weather and geographical distribution has also been analysed here.

Vitamin and antioxidant supplementation in the prevention and treatment of atypical myopathy - a pilot study to establish relevant tolerance intervals and assess the feasibility of supplementation

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In horses suffering from atypical myopathy (AM), vitamin and antioxidant supplementation was associated with a higher survival rate. However, the suspected state of oxidative stress in these sycamore maple tree intoxicated horses has not been studied. In this study, in order to establish relevant tolerance intervals of blood oxidant/antioxidant biomarkers in leisure-horses and to evaluate the feasibility of oral supplementation as a potential preventative measure, 16 horses from two stables were sampled in November 2020 and again after 4 weeks of daily oral supplementation with a mixed commercial of vitamins E, B, L-lysine and selenium preparation (n=8) or 4 weeks without supplementation (n=8). The oxidant/antioxidant status of a hospitalised AM case was subsequently compared. Inter-stable differences in selenium and glutathione peroxidase, and supplement-related increases in selenium were found, while functional biomarkers of oxidative damage were unchanged by supplementation reflecting likely soils mineral deficiencies alongside adequate antioxidant compensation. Furthermore, known correlations between several biomarkers was confirmed. The AM case showed high levels of most antioxidants. These results support the possibility of establishing leisure-horse specific norms for circulating oxidant/antioxidant biomarkers, however larger samples or healthy co-grazers should serve as references. Furthermore, AM cases are not all necessarily under systemic oxidative stress at hospitalisation, but longitudinal follow-up of a wider panel of biomarkers in various tissues is needed to evaluate oxidative stress, and thus better guide vitamins and antioxidants use in therapy and prevention.