



# **Proceedings of the 6<sup>th</sup> FARAH-Day**

**Faculty of Veterinary Medicine  
(University of Liège - Belgium)**

**November 8, 2019**

*One Health*

L'Animal et l'Homme, une même santé





## Oral presentations

### Untargeted metabolomics studies focusing on prognosis and resistance factors leading to the identification of new potential biomarkers in equine atypical myopathy

Wouters Clovis<sup>1,2,3,4</sup>, Toquet Marie-Pierre<sup>1,2</sup>, Renaud Benoît<sup>3</sup>, Marcillaud-Pitel Christel<sup>5</sup>, Fortier-Guillaume Justine<sup>4</sup>, Richard Éric<sup>1,2</sup>, Votion Dominique<sup>3</sup>

1. Normandie Université, UniCaen, EA7450 Biotargen, Caen, France; 2. Pôle équin, FARA, ULiege; 3. Pommier-Nutrition, Châteauneuf-en-Thymerais, France; 4. Réseau d'Épidémiologie-Surveillance en Pathologie Equine (RESPE), Caen, France

**Corresponding author:** [clovis.wouters@doct.uliege.be](mailto:clovis.wouters@doct.uliege.be)

Atypical myopathy (AM) is a severe rhabdomyolysis affecting grazing horses. AM is caused by the ingestion of hypoglycin A, which is found within seeds and seedlings from sycamore maple. Once ingested, hypoglycin A is metabolized into a toxic compound that impairs lipid metabolism. The lethality rate is comprised between 61 to 74 %. In AM affected pastures, healthy cograzing horses (i.e. asymptomatic) account for 57.5%. The aim of the study was to identify blood discriminant biomarkers with prognosis and resistance relevance in AM. With this purpose, the first blood sample was analysed by comparing pairwise groups: i) ill vs. healthy cograzing horses ii) non-survivor vs. survivor horses. Serum or plasma heparin lithium samples were analysed in biological triplicate using an untargeted polar metabolomic approach with an ultra-performance liquid chromatography coupled with mass spectrometry. Metabolic data were evaluated using unsupervised and supervised analyses and machine learning algorithm. Thirty-six metabolites, taken independently, were all found to fully discriminate ill and healthy cograzing horses. Two signatures of five metabolites each were found to discriminate survivor and non-survivor horses. Two acylcarnitines (i.e. isobutyrylcarnitine and hexanoylcarnitine) were identified with a high confidence level, using an in-house library. Fourteen other metabolites were putatively identified, based on online libraries. Further investigations are required in order to validate signatures.

---

### Pilot study assessing the possible benefits of a higher level of implementation of biosecurity measures on farm productivity and health status in Belgian cattle farms

Véronique Renault<sup>1</sup>, Marc Lomba<sup>2</sup>, Laurent Delooz<sup>2</sup>, Stefaan Ribbens<sup>3</sup>, Marie-France Humblet<sup>4</sup> and Claude Saegerman<sup>1</sup>

1 Research Unit in Epidemiology and Risk Analysis Applied to Veterinary Sciences (UREAR-ULiege), FARA Centre, Faculty of Veterinary Medicine, ULiege; 2 Regional Association of Animal Health and Identification (ARSIA); 3 Diergezondheidszorg Vlaanderen (DGZ); 4 Department of Occupational Protection and Hygiene, Biosafety and Biosecurity unit, ULiege.

**Corresponding author:** [vrenault@uliege.be](mailto:vrenault@uliege.be)

A proper level of biosecurity (BS) is necessary in order to prevent and control the introduction and spread of infectious diseases. Nevertheless, previous studies highlighted a low implementation level of biosecurity measures (BSM), especially in cattle farms. Among the reasons of non-implementation, the cost-benefits ratio and the utility of the BSM were the most frequently expressed by the farmers. In order to support a long-term behavior change, it is therefore necessary to gather more information and evidence on their cost-effectiveness and their importance or utility in terms of disease prevention and control. The objectives of this study were to determine whether the farm or farmers' profile correlated with the implementation level of BSM and if there was a positive correlation between the BSM implementation and the farm production and health parameters. A stratified and randomised survey was conducted in 100 Belgian farms to collect data on BSM implementation. The health status and production data of the surveyed farms were provided by the Regional Animal Health Services provided the farm. Different BS score and sub-scores were calculated for each farm based on the implementation level of different BSM grouped in 16 domains. The study highlighted a significant and negative correlation between the mortality rates in adult cattle (over 24 months) and young calves (0-7 days) and different BS compartment scores. It also demonstrated that the farms having a higher general BS score were more likely to have a BVD free status. These evidence-based findings are encouraging as they demonstrate the benefits of implementing BSM and could promote their adoption by farmers.