

The First DairyCare Conference will take place in Copenhagen on August 22nd and 23rd 2014

The Conference is open to all Action Participants and others working in the area of dairy animal health and welfare. There is no registration fee.

ABSTRACT

BIOMARKERS FOR SEASONAL HEAT STRESS: A HOLISTIC APPROACH

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Environmental heat stress, present during the hot and dry summers in Mediterranean climate, severely impairs animal's performance, particularly in animals of high genetic merit. Although heat stress has been considerably studied in dairy cattle, the mechanisms of seasonal acclimation are less well understood. Besides, in Mediterranean region, there are also great interests in small ruminant dairy species, which are even less well studied. Biomarkers may have great potential in identifying levels of thermal stress. Although often referred, blood cortisol does not allow a full understanding of heat stress, due to its circadian cycle and because the confounding with other types of stress. Consequently, new and better non-invasive methods, than allow to assess stress, are necessary. The hair, faeces or saliva fulfil these requirements. Salivary proteins have been extensively studied in humans, due to their potential as non-invasive biomarkers of pathology and physiology. Nonetheless, in the last years, some research emerged demonstrating the value of saliva for farm animal studies. Based on previous line of research, on ruminant salivary proteome and heat stress, we propose to search for salivary and faeces biomarkers of seasonal acclimation to heat stress and to compare them with other well-known physiological and endocrine indicators.

Unlike what occurs at tropical climates where animals must combine a high heat tolerance with high performance; in Mediterranean climate due to high climate seasonality, the animals must give priority to the higher physiological versatility.

We this purpose we intend: i) to identify reliable biomarkers (saliva, faeces) that measure levels of heat stress in dairy animals; ii) to search for short and long term biomarkers of thermal stress, based on seasonal acclimatization. Consequently, some experiments, that combine responses to acute and chronic heat stress, will be designed. The different known physiological parameters associated with heat stress will be evaluated together with potential

biomarkers in saliva and faeces. The temporal inference will show the quality of biomarker for the short and long term.

Key words: Biomarkers, saliva, faeces, heat stress, dairy, seasonal acclimation