

Research program IZS VE 08/15

Identification of serum biomarkers for paratuberculosis infection in dairy cattle by high-throughput spectrometric and spectroscopic approaches

Project coordinator: Nicola Pozzato

Paratuberculosis (Johne's disease, JD) is a chronic enteritis of ruminants caused by *Mycobacterium avium* subsp. paratuberculosis (MAP). JD is responsible for considerable economic losses to the dairy industry and is spread mainly via fecal shedding. The control of JD is hampered by inadequate diagnostic tools that fail to promptly reveal infected animals.

The Metabolomic approach is gaining importance in the study of infectious diseases. Mass spectroscopy and NMR spectra demonstrated their capability in quantifying specific metabolic changes in infectious diseases such as human tuberculosis and experimental MAP infection. In addition, Ambient Mass Spectrometry (AMS) allows direct, rapid, and high-throughput analyses with little or no sample pretreatment. These systems are becoming popular in food technology and safety and may be applied in the health area.

In this project, sera from JD affected cattle herds will be prospectively examined to identify infected animals that develop the infectious stage of JD. This approach will address the diagnostic potential of AMS versus NMR spectroscopy in identifying metabolic markers associated to natural MAP infection.