

Seminal plasma fingerprints

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With the usage of new tools like CASA, testing for RT, quarantine and training, there still are subfertile boars passing the screening of boars suitable for AI. Thus, something else may play a very important role. Seminal plasma (SP) is important for sperm function, through its components, e.g. proteins, ions, enzymes, energy substrates and cytokines, together influencing sperm function and protecting them from ejaculation until capacitation. It is crucial to understand the composition of SP to recognize the biological functions and how it affects male fertility. Vibrational spectroscopy techniques like Fourier-transform infrared (FTIR) and Raman spectroscopies are a group of analytical techniques known for their ability to capture chemical information from a sample in few seconds with minimal or no need for sample preparation. Thus, the techniques are increasingly being used for providing chemical fingerprints of biological samples like microbes, tissues and body fluids. The aim of this study was to evaluate these spectroscopic tools for their ability to capture chemical fingerprints of SP and investigate the SP metabolites' variance in individuals, in different age classes and between breeds, and the relationship between SP components, sperm quality, and reproductive performance. In the study, SP samples from Landrace and Duroc boars were analyzed using FTIR and Raman spectroscopy. CASA data of ejaculates with inseminations were combined and investigated with the spectroscopy data. Validation of the approach was performed using Nuclear Magnetic Resonance (NMR) spectroscopy. In the presentation, the main results of the study will be provided together with an outlook of the use of spectroscopic tools for rapid quality characterization of SP.