Assessing infertility in stallions: A new approach using an enzymatic indicator

Analytical validation of paraoxonase-1 (PON-1) activity in seminal plasma in horses

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Why are we doing this study?

In veterinary medicine and equine reproduction management, it is important to identify any subfertile or infertile stallions. Evaluation of the fertility of breeding stallions has mainly relied on physical examination of the reproductive system and evaluation of the sperm concentration, motility and morphology. Ultrasonography of the scrotum, testis, epididymis and spermatic cord has also been used to identify stallions with subfertility. Unfortunately, these cannot detect spermatozoa damage on a cellular level. With this new assay, we might be able to detect spermatozoa damage caused by oxidation.

What are we looking for in stallions’ semen?

Paraoxonase-1 (PON-1) found in seminal plasma of the stallions has a potential use to diagnose subfertile or infertile stallions. PON-1 is an enzyme that produce by the liver and present in blood and other body fluid. It functions as an antioxidant to protect cells against oxidative damage and lipid peroxidation. PON-1 is a new indicator found in the semen of stallions that have a potential diagnostic value in stallions.

What do we aim to investigate?

In this study, we aimed to find out if PON-1 activity can be accurately measure in seminal plasma and the reference interval of PON-1 activity in seminal plasma.

The next step?

PON-1 activity can be accurately measured using the assay. We hypothesis that PON-1 found in seminal plasma can protect spermatozoa from oxidative damage and might correlate to quality and function of sperm. Next, we might be able to apply it for further diagnose test on infertility in stallions.