Is Your Cat or Dog Really Spayed?: A Novel Test to Diagnose Ovarian Remnant Syndrome

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Post-spay surgery, gonadal tissue can remain and pose a recurrent challenge in the care of dogs and cats. Shelters and pet owners are often unaware of Ovarian Remnant Syndrome (ORS) but notice unexplained behavioral changes in their pets post-procedure. Remnant tissue can be associated with life-threatening conditions like uterine and ovarian tumors. The aim of this study was to develop a low-cost dried blood spot (DBS) test to diagnose ORS. Anti-Müllerian Hormone (AMH), an important regulator of active gonadal function, and its circulating levels were expected to be negligible in spayed subjects when compared to intact and ORS subjects. An Enzyme-Linked Immunosorbent Assay (ELISA) for AMH was developed to quantitate AMH in canine and feline blood specimens. The AMH ELISA was highly reproducible (20 replicates) with a coefficient of variation of 2.7% at 3.8ng/ml. The DBS method was very accurate with a slope of 0.51 between one and two DBS. DBS specimens were highly correlated to serum ($r=0.99$, $p<0.005$) and can be used interchangeably. The mean canine AMH concentrations measured in intact, ORS, and spayed subjects were 3.36, 0.82, and 0.15ng/ml, respectively. AMH concentrations were concordant with active gonadal status. The diagnostic accuracy for the test was 97.08% for canines, and 91.39% for felines, respectively. The positive AMH result was consistent with an intact or ORS subject while a negative test was consistent with spayed subjects. The DBS technology can provide a non-hazardous method for sample transportation from remote collection sites, further revolutionizing the future of diagnosing truly spayed animals.

Awards Won:
Third Award of $1,000