Rapid Diagnosis of Surra in Water Buffaloes Using Plasma for CATT/*T. evansi* Method: A Field Laboratory Troubleshooting and Case Report

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Abstract

Background: Surra, caused by *Trypanosoma evansi*, is an economically significant haemoparasitic disease affecting livestock in Thailand. Standard parasitological diagnosis via direct microscopic examination often faces sensitivity limitations, particularly during periods of low parasitemia or when blood samples deteriorate during transport. This report focuses on utilizing plasma to overcome sample constraints in urgent diagnostic situations.

Objectives: To demonstrate the practical use of EDTA plasma as an alternative to serum for the Card Agglutination Test for *T. evansi* (CATT/*T. evansi*) to provide a rapid and accurate serological diagnosis under field laboratory conditions when serum samples are unavailable.

Methods: One sudden death (3-year-old male) and one clinically ill buffalo (7-year-old female) were found in a herd of 23 water buffaloes (9 males and 14 females) in an upper northeastern province of Thailand. EDTA-anticoagulated blood samples from both animals were submitted to the laboratory following overnight transport. Initial diagnostic tests included determination of packed cell volume (PCV), Woo's technique, and microscopic examination of thin blood and buffy coat smears. Due to the lack of serum samples, EDTA plasma was obtained by centrifugation and used for CATT/*T. evansi* testing.

Results: Initial laboratory results for the deceased buffalo showed positive results (+4) in both blood smears and buffy coat smears, while Woo's technique was negative. In contrast, the sick buffalo exhibited severe anemia (PCV 14%), but all parasitological examinations yielded negative results, possibly due to low parasitemia or parasite lysis during transit. However, CATT/*T. evansi* testing using EDTA plasma showed strongly positive results in both animals. This serological finding confirmed the infection in the sick buffalo, highlighting the high sensitivity of CATT even when parasites were not microscopically detectable.

Conclusion: This report demonstrates the potential utility of EDTA plasma as a practical substitute for serum in CATT/*T. evansi* method when rapid diagnostic results are required, and serum samples are unavailable. The detection of specific antibodies in plasma ensures diagnosis accuracy, enabling veterinarians to administer timely treatment with Diminazene aceturate. In this case, prompt intervention successfully cured the sick animal and facilitated effective disease control within the herd.

Keywords: *Trypanosoma evansi*, Surra, CATT, Plasma, Water buffalo

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