# Evaluation of The Fulton and Remington Tests for Serologic Research of Toxoplasmosis in Cattle

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## Summary

Prevalence of toxoplasmosis was determined in 100 cows. The Fulton and Remington tests were used to demonstrate the antibodies classes in the different phases of the infection. The study concluded that the two tests could provide significant information about the state of the infection.

## Introduction

Many authors found a significant bovine serological positivity of toxoplasmosis and our previous research showed a remarkable positivity also in Italy.[1,2,3,4,7,8]

The purpose of this study is to evaluate two different types of test, Remington and Fulton, to provide the basis for better understanding of the results.

## Methods

The objects of our studies have been 100 Italian Friesian calves between 2 and 7 years old, randomly selected from 5 Northern Italy herds.

We subjected all the animals to serological examination with the tube test without anticoagulant. The blood samples were immediately centrifugated and the serum was kept at -18°C.

In all the samples, we applied serological tests:

- Direct Agglutination (AD) test for detection of antibodies.
- Fulton test (Direct agglutination after treatment with 2-mercaptoethanol "2- ME").
- Indirect Fluorescent - antibody test to single out IgG (IF).
- Remington test (indirect fluorescent - antibody test to single out IgM).

For the AD test, serum was screened using a kit commercially available that employs a formalinized *toxoplasma gondii* like diagnostic antigen and a phosphate-buffered saline (PBS) coloring solution. We considered a positive serum to be >/= 1:32.

For the Fulton test, serum was treated with 2-mercaptoethanol (2-ME) to completely destroy the agglutinant ability of sera with IgM antibody. When between treated serum and not treated serum there existed two or more titre of difference, we can suppose that the agglutination is due to the IgM activity.

The IF and Remington tests were performed using slides with fixed toxoplasma antigen and in accordance with the test, fluorescein conjugatet goat anti-IgG or IgM bovine. The slides were examined with fluorescence microscope and were considered positive tites = or > 1:40.

## Results

The following table shows the number and the percentage of positive subjects in different tests.

| Breedings | n°cows | AD | | Fulton | | IFI | | Remington | |
|---|---|---|---|---|---|---|---|---|---|
| | | n°+ | % | n°+ | % | n°+ | % | n°+ | % |
| 1 | 20 | 20 | 100 | 12 | 60 | 3 | 15 | 10 | 50 |
| 2 | 20 | 19 | 95 | 16 | 80 | 2 | 10 | 10 | 50 |
| 3 | 20 | 14 | 70 | 8 | 40 | 2 | 10 | 17 | 85 |
| 4 | 20 | 19 | 95 | 15 | 75 | 4 | 20 | 13 | 65 |
| 5 | 20 | 20 | 100 | 18 | 90 | - | - | 17 | 85 |
| Totals | 100 | 92 | 92 | 69 | 69 | 11 | 11 | 67 | 67 |

## Discussion

In accordance with other Italian authors[1,2,3,4,7,8] a serologic positivity obtained by AD is 92%, Fulton test shows that this result is imputable to IgM toxoplasma antibodies. This may be diagnostic of acute infection as it is common knowledge that IgM antibodies are the first fraction that appear during the toxoplasma infection.

The 11% (IF test) and the 67% (Remington test) of seropositivities to IgG antibodies confirm this thesis. We presume that the different percentages obtained with AD (92%) and IF (IgG 11%, IgM 67%) are due to different types of dilution.[9,10]

Therefore the obtained results are confirming what was illustrated by Dubey (1980) who says that in the

cow the presence of parasites in the tissues is limited and not very lasting, therefore the positivity can be related to multiple infections.

The authors believe that AD and Fulton are better tests for epidemiologic examinations while the IF and Remington are more specific and correct for monitoring the disease.

### References


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# Design and Development of a Bovine Curriculum


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### Abstract

*Objective:* The curricula of veterinary colleges have evolved with limited input from practitioners as related to the workplace competencies (tasks) essential to practice operation. A perceived need was identified to involve bovine practitioners in identifying workplace competencies for two reasons: 1) financial constraints resulting in the need to streamline curriculum and 2) rapid changes occurring in bovine practice. The project's objective was to identify competencies needed by Missouri bovine practitioners.

*Methods:* Twenty-one (21) Missouri cattle practitioners from private and public sectors identified the competencies bovine practitioners use. There competencies were determined by a brainstorming process called Develop A Curriculum (DACUM). The developed list was validated by 200 randomly selected bovine practitioners in seven mid-western states. The validation process consisted of rating each task as to Importance, Frequency, and Difficulty.

*Results:* The DACUM process identified 323 tasks distributed unevenly under 125 major categories (duty bands). The duty bands with their respective (number of tasks) were: General Animal Husbandry/Production (16); Population Medicine (111); Individual Animal Medicine (41); Anesthesia (12); Surgical treatments (46); Medical Treatments Techniques (18); Clinical Pharmacology (9); Recognize, Treat, and/or control Diseases (42); Business Skills and Practice Management (14); People Skills Ability (12); Informatics (5); Quality Assurance (4); Ethics and Professionalism (12); Delivering Veterinary Service to Public Markets (17); and Benefits and Structure of Organized Veterinary Medicine (5).

Conclusions: Practitioners place a greater value on the importance of certain tasks than do veterinary college faculty. There clearly is a need to make major adjustments in our curriculum.



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