



Developing and validation of Local Mastitis Test Reagent (LMTR) for diagnosis of subclinical mastitis in the farm animals

Watban Wahhab Sihhaila¹; Tabark Ghazi Abbas¹; Karima Akool Al Salihi² 
<https://orcid.org/0000-0002-5698-2678>

¹ College of Veterinary Medicine, AL Muthanna University/ AL Muthanna, Samawah, Iraq.

² Department of Internal and Preventive Veterinary Medicine/ College of Veterinary Medicine, AL Muthanna University/ AL Muthanna, Samawah, Iraq.

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***Corresponding author:**

Professor Karima Akool Al Salihi:

Email address: kama-akool18@mu.edu.iq

Abstract

Mastitis is inflammation of the mammary gland and is considered one of the most common diseases that causing economic losses due to decreased milk production, high treatment costs, animal death, and earlier culling. Mastitis can affect one or more of the udder quarters and can be divided into different categories, clinical mastitis (CM) that reveals symptoms and subclinical mastitis (SCM). Unlike the clinical form, in subclinical form, there is neither visual detection of abnormalities in milk nor in the mammary gland. So, routine diagnostic screening tests for early detection of mastitis are necessary to treat it and avoid economic losses.

Mastitis screening tests are used the commercial kits that cost huge money. This research study intends to develop a low-price Local Mastitis Test Reagent (LMTR) for the detection of subclinical

mastitis (SCM) and to examine its efficacy, accuracy, and validity at the field level. Moreover, to compare the results and the usefulness of the locally produce reagent with the commercial California mastitis tests and the Draminski mastitis test to correctly detect subclinical mastitis in dairy cows. The following substances, sodium carbonate (1%), sodium lauryl ethyl sulfate (0.7%), and Bromocresol purple (0.01%), were used for the preparation of LMTR. Thirty animals (74 Quarters) milk samples that comprised of 7 cows (7X 4 Quarters = 28 Quarters), 12 goats (12X 2 Quarters = 24 Quarters), and 11 ewes (11X 2 Quarters = 22 Quarters), were used to confirm the newly developed (LMTR) to validate its efficacy as an individual test kit in detecting SCM based on somatic cell count (SCC). The efficacy of the newly developed LMTR was compared with the California Mastitis Test (CMT) kit and Electrical conductivity test using DRAMINSKI Mastitis Detector. The results of this study reveal that subclinical mastitis test reagent, namely, (LMTR) was successful developed in this study. In this study, the percentages included 40 %, 37%, and 23% for cow, goat, and sheep, respectively. The results of CMT and LMTR for seven cows comprise 28 quarters, including RA, RH, LA, LH, which revealed agreement in the reactions and reading of the results. Additionally, 46 milk samples collected from 12 goats and 11 ewes were also showed the ability of LMTR to detect subclinical mastitis in goats and sheep in comparison to commercial CMT. The results of the current study, using the Draminski mastitis test / screening instrument for the examination of milk samples were revealed an obvious variations in all examined samples. Moreover, obvious variations in the correlation between the results of the Standard commercial California mastitis test (CMT), Local Mastitis Test Reagent (LMTR), and electroconductivity tests in the diagnosis of subclinical mastitis in cow, ewes, and goats were also seen.

In conclusion, the results of this study approved that the newly cheap-price mastitis test reagent LMTR was prepared successfully and revealed a good reliability for diagnosis of SCM in compare to California mastitis test and Electrical conductivity test using DRAMINSKI Mastitis Detector. The researchers recommend to use LMTR for the diagnosis of subclinical mastitis in the field as it is inexpensive and can simply prepare, moreover to do another future study including large numbers of animals in order to accurately validate the local product LMTR.



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