

Biomarker based detection of subclinical mastitis by liquid phase blocking EL

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Abstract : Mastitis is known to be an economically important disease hampering desired progress in the dairy industry. Mastitis caused by Streptococci is of the subclinical type. Early detection of mastitis is of paramount importance to avoid permanent damage to the udder and loss of milk. The presently detection methods of Electrical Conductivity test (EC) and Somatic Cell Count (SCC) for subclinical bovine mastitis are less reliable as the results are dependent not only on infection but changes also do occur due to various other stresses. Detection of etiological agent is cumbersome and time consuming and needed only for therapeutic purpose. Hence the development of a rapid and reliable test is the need of the hour. Detection of the molecules (Bio markers) that are produced during the invasion of the pathogen is the best approach. We developed a bio-marker based Liquid Phase Blocking ELISA for subclinical mastitis detection. A purified biomarker protein produced in E. coli and antiserum raised against it were used to develop the test (product patent filed-3807/DEL/2011). A total of 87 bovine milk samples was collected from all lactating animals irrespective of the age at the lactation. Initial evaluation of SCC revealed that all the samples were from Subclinical Mastitis(SCM) except one, since, as per the conventional criteria the SCC values were more than >5 lakhs are considered to declare positivity. All the 87 samples were subjected to LPB ELISA and compared with SSC values. The results showed that the milk samples having SCC value 0.1 to 10 lakh showed average inhibition of 30% and samples with 10 to 15 lakh SCC showed the average inhibition value of 40% and samples with SCC 15 and above revealed an average inhibition of 50%. Liquid phase blocking ELISA (LPB-ELISA) developed by us

showed high correlation with the SCC and represents a single test for the rapid detection of subclinical mastitis with good sensitivity, specificity.

keywords

Electrical Conductivity, Somatic Cell Count , Subclinical Mastitis, Biotechnology.

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