

## **Alteration in Blood Parameters in Dairy Cows Affected with Acute /Chronic Mastitis: A Short Communication**

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### **ABSTRACT**

*Mastitis denotes the inflammation of parenchyma of mammary gland and can be observed in acute, gangrenous, sub clinical and chronic form. Change in hemato-biochemical parameters play an important role to rule out physiological and pathological state of mastitis in affected animal. Various research studies were reviewed to understand the changes in blood parameter in dairy cattle affected by mastitis. Increase in leukocyte, neutrophil count and decrease in lymphocyte and macrophages were reported in several research. Likewise, there is no significant changes in Packed Cell Volume (PCV) and Haemoglobin level. Most of the research finding shows increase in Aspartate aminotransferase (AST) level and total protein in blood in infected cattle. There is fluctuation in blood mineral level values during mastitis and may either increase, decrease or do not change*

**Keywords:** Blood parameter, Change; Inflammation of udder,

### **INTRODUCTION**

Mastitis denotes the inflammation of parenchyma of mammary gland with physical, chemical and microbiological changes in the milk along with pathological change in the glandular tissue (Radiostits, 2010). Mastitis in bovine can be observed in acute, gangrenous, sub clinical and chronic form (Krishnappa, 2016). Bovine mastitis is one of economically challenging disease to the farmers all across the world. About 21% of the milk yield and is reduced and 25% of butter fat is reduced in the affected cattle (Chakrabarti, 2014). Older animals and a higher lactation has a higher chance of infection (Radiostits, 2010). Various changes are found in blood parameters in cattle affected with mastitis. Change in hematobiochemical parameters play an important role to rule out physiological and pathological state of mastitis in affected animal (Sarvesha, 2017). This short communication aims to understand the changes and findings occurred during the disease conditions conducted by different researchers.

### **METHODOLOGY**

We conducted literature review to understand the change in blood parameters. We searched in PubMed, Sci-Hub, and Google Scholar. The keyword used to search the literature includes mastitis, and change in blood parameters during mastitis.

## **RESULTS**

### **Alterations in white blood cells**

Increase in leukocyte and neutrophil count in cattle with mastitis [Krishnappa, 2016; Singh, 2014; Tripathy, 2018; Atroshi, 1996; Sarvesha, 2017; Sadek, 2017; Alhussien, 2015]. Contrary to this finding by several researchers, a research conducted to know alteration in blood parameters based on causative agent shows decrease in white blood cells in gram negative mastitis (Smith, 2001). Decrease in lymphocytes and macrophages in the infected cattle (Krishnappa, 2016; Alhussien, 2015; Sarvesha, 2017).

### **Alteration in Hemoglobin and PCV level**

Significant decrease in Hemoglobin level and PCV level were observed in affected cows (Tripathy, 2018). However, in another study it was observed there was an increased Hemoglobin concentration and hematocrit level in gram negative mastitis (Smith, 2001). In another study no significant changes in Hemoglobin and PCV level were reported (Krishnappa, 2016; Atroshi, 1996; Sarvesha, 2017).

### **Alteration in protein and liver enzyme**

Increase in AST level and increase in albumin globulin and fibrinogen level in mastitis affected cows (Singh, 2014; Tripathy, 2018; Singh, 2019; Sarvesha, 2017). Contrary to this another research showed low total protein and albumin level in a cow with mastitis (Sadek, 2017).

### **Alteration in blood mineral level**

In mastitis affected cow among minerals Ca, Mg, Na level were found to be increased (Krishnappa, 2016). In another study, increase in calcium level with non-significant changes in P, Mg, Na and K level was reported (Singh R., 2014). Likewise increase in Na, K and decrease in Ca and P level was reported by Tripathy (2018). Increase in Na and K level and non-significant changes in Mg, P, Zn and Fe was reported by Singh (2019). Low calcium level in blood serum with clinical mastitis with non-significant changes in Zn, Mg and Fe was found by YILDIZ (2005). Likewise, Low serum calcium level regardless of type of pathogens was observed by Smith (2001), high average value of Ca, P, Na, Cl and K by Sarvesha (2017) and non-significant changes in Na and K level by Atroshi (1996).

## **CONCLUSION**

Increase in leukocyte, neutrophil count and decrease in lymphocyte and macrophages are found in most of the researches. Likewise, there is no significant changes in PCV and Haemoglobin level in most of the studies except few ones. Most of the research findings support increase in AST level and total protein in mastitis infected cattle. There is uncertainty in change in blood mineral level values during mastitis and may either increase, decrease or remain the same. Alteration in blood parameters cannot only confirm mastitis due to which other diagnostic tools should be used for confirmatory diagnosis. However, these changes show the physiological and pathological condition of an individual with mastitis.

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