



ISSN (E): 2277- 7695  
ISSN (P): 2349-8242  
NAAS Rating: 5.03  
TPI 2019; 8(11): 186-188  
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www.thepharmajournal.com  
Received: 04-09-2019  
Accepted: 06-10-2019

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## Efficacy of herbal preparations in the therapy of sub clinical mastitis in cows of periurban areas of Hyderabad

**Aruna Maramulla, Ambica Gadige, Lakshmi Kosapati, Swathi Bommu and Padmaja Katta**

### Abstract

Sub clinical mastitis affected animals were randomly selected for present study by screening the milk samples and divided into two groups i.e., group I and II. Group I cows were treated with topical application of udder with the paste prepared from *Moringa oleifera* fresh leaves, turmeric powder and common salt. While group II animals received oral medication with bolus prepared from *Ocimum sanctum* dry powder, honey and lemon juice and both therapies were given twice daily for 7 days. Out of 10 animals and 16 affected quarters from each group, 9 animals (90.00%) and 14 quarters (87.50%) in group I and 9 animals (90.00%) and 15 quarters (93.75%) in group II were recovered completely and therapeutic efficacy of both treatments were compared.

**Keywords:** Cows, subclinical mastitis, treatment, *Moringa oleifera* and *Ocimum sanctum*

### Introduction

Mastitis is the inflammation of mammary gland and is a complex disease causing major economic loss in dairy industry throughout the world. Examination of the association between milk yield and disease in many dairy cows found that higher milk yield was not a factor for any disease except mastitis (Grohn *et al.* 1995) [3]. Less incidence of the disease in buffaloes might be due to the thick and compact epithelium, thick keratin layer and thick muscle sphincter in streak canal of udder of buffaloes as compared to crossbred cows (Saini *et al.* 1994 and Mukesh *et al.* 2014) [9, 6]. Mastitis is one of the costliest managerial diseases of diary sector causing huge financial losses in the form of high medication cost and low milk production.

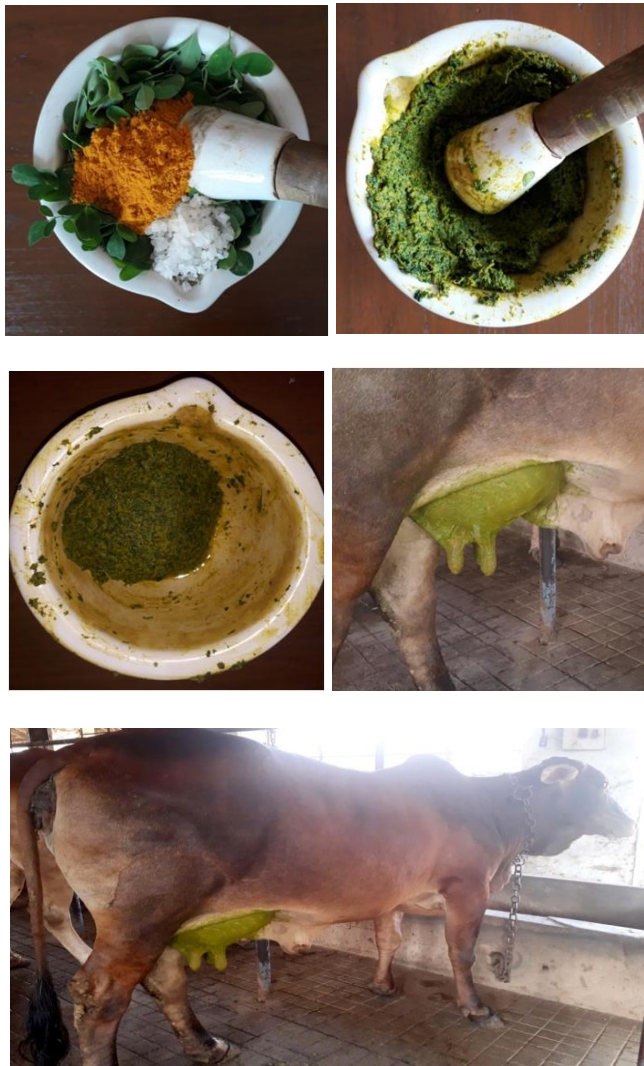
Generally antibiotic therapy is implemented in treating both clinical and subclinical mastitis cases in field conditions. However, many bacterial strains are resistance to antibiotics used which is leading to serious hazard called Antimicrobial Resistance (AMR). Hence, the present vision is diverting towards the use of ethno veterinary preparations like herbs and herbal product has been gaining greater importance in treatment, prevention and control of both clinical and subclinical mastitis. Furthermore, most of these herbs are extremely safe, and do not have harsh side effects as allopathic drugs. It may be beneficial to use the herbs noted with confirmed antibacterial and antiviral effects for treatment. Generally, both drugs and herbs are effective to treat mild to moderate cases of bacterial infections, but use of herbs is far more effective than drugs for treating certain infections (Lee, 2011). WHO stated that, 80% of people in developing countries depend on ethno-veterinary practices due to its inexpensive, easy accessibility and its easiness of preparation. Further, 50% of all modern drugs originally came from plants directly or its structural modification suggests for its potency and safety (Mooventhan *et al.* 2016) [4].

### Materials and methods

Two herbal preparations have chosen for the present therapeutic trial. The cows with subclinical mastitis were divided into two groups i.e., group I and II for the purpose of trial, each containing 10 cows with 16 mastitis affected quarters. The apparently healthy cows were taken as group III (10 cows, 16 quarters). Milk samples were collected for diagnostic tests and for cultural examination before treatment. The animal was considered as free from the disease when milk samples showed a negative reaction for CMT along with culturally negative results.

### Group I (Topical application)

The group I animals were treated with paste as topical application prepared from *Moringa oleifera* leaves 100g, turmeric powder 10g and common salt 10g and applied externally over the affected udder twice daily for 7 days. Before each application, the udder was washed well with water and the milk from all quarters was stripped completely.



**Fig 1:** Preparation of paste for topical application

### Group II (Oral administration)

The group II animals were treated with bolus as oral administration prepared with 100 g of Tulasi (*Ocimum sanctum*) dry powder, 3 tea spoons of honey and juice from one Lemon given twice daily for 7 days.



**Fig 2:** Preparation of oral medication

### Results and discussion

In present study, out of 16 SCM affected quarters from 10 animals belonging to group I which were treated with topical application of paste prepared from *Moringa oleifera* leaves, Turmeric powder and Common salt, 14 quarters (87.50%) and 9 animals (90.00%) were completely recovered by day seven (7), respectively and was evident from reduced SCC, pH and increased fat content in milk and increased blood Hemoglobin, TEC and PCV and reduced TLC, neutrophils and lymphocyte count. The present curative results are in agreement with Safangat *et al.* (2017) [8] who concluded that the juice of moringa leaves (*Moringa oleifera*) with a concentration of 20% (T2) and 30% (T3) has the same capability with chemical antiseptic of Iodips (T1) and therefore can be used to reduce the incidence of mastitis and to increase milk production of dairy cattle during lactation. Similarly, Mooventhan *et al.* (2016) [4] treated clinical mastitis cases with topical application of certain herbal ingredients and reported favorable results. Also these therapeutic findings are in near correlation with Balakrishnan *et al.* (2017) [1] with the reports of curative results with respect to decrease in pH, SCC, EC in mastitis affected animals after 6-7 days of treatment with a herbal preparation containing combination of *Aloe vera* leaves, Burn fruit, *Curcuma longa* leaves and calcium hydroxide and milk production returned to near normal to the pre-mastitis level due to effective cure because of the synergistic action of herbs owing to broad spectrum antimicrobial, anti-inflammatory and immune modulatory activities with 18 to 49% reduction in antibiotic residues in the milk. Co-ingredients used i.e., turmeric powder and common salts potentiate the antibacterial action of *Moringa oleifera* also these have got anti-inflammatory and antibacterial properties.

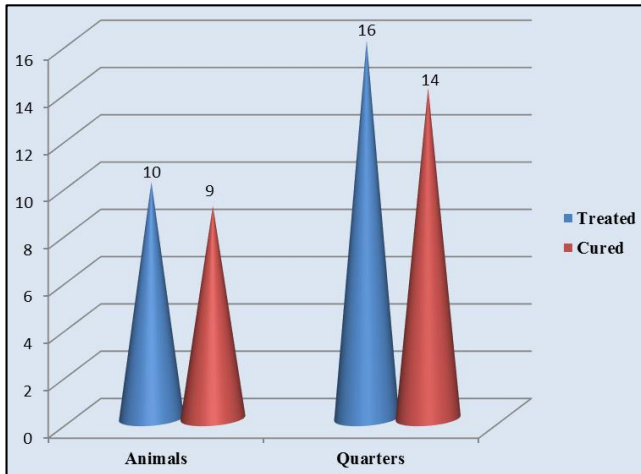
16 affected quarters from 10 animals in group II were treated with oral administration of herbal medicine bolus prepared from dry powder of *Ocimum sanctum* leaves, honey and Lemon juice twice in a day for 7 days and out of these 9 animals and 15 quarters were completely recovered from sub clinical mastitis with 90.00 and 93.75 percent therapeutic efficacy, respectively with reduced SCC, pH and increased fat content in milk, increased blood Hemoglobin, TEC and PCV and reduced TLC, neutrophils and lymphocyte count. These results are matching with the findings of Shafi *et al.* (2016) [10] who reported that treatment intra mammary infections with *Ocimum sanctum* leaf powder eliminated 9/13 (69.23%) of infection after 14 days of treatment. Similarly, Mukherjee *et al.* (2005) also recorded reduced bacterial count and increased neutrophil and lymphocyte count with enhanced phagocytic activity and phagocytic index after treatment of SCM affected cows with aqueous leaf extract of *Ocimum sanctum*. Cesar *et al.* (2008) also noticed improvement with intramammary infusion of *Ocimum basilicum* extract in mastitis conditions. Co ingredients lemon and honey that were added to would act synergistically with *Ocimum sanctum* powder in improving antibacterial, anti-inflammatory and immune modulatory effect. The findings of Balakrishnan *et al.* (2017) [1] who treated clinical mastitis with herbal therapy and reported good results in 6-7 days with two lemon fruits juice twice daily per. Similarly, Mokhtar *et al.* (2019) administered 5ml of multifloral undiluted honey aseptically into the quarters by intra-mammary infusion for two consecutive days (day 1 and day 2) and collected cows' milk samples and conducted bacteriological analysis during interval of 0, 7, 14, 21, 52 and 60 days and following intra mammary honey administration,



two cows at 7 and 14 days; three at 21, 52 and 60 days were cured from *Staphylococcus aureus* infection, respectively and two cows at day 21, 52 and 60 were cured from *Pseudomonas aeruginosa* infection.

**Table 1:** Efficacy of topical therapy with *Moringa oleifera* in SCM affected group I cows.

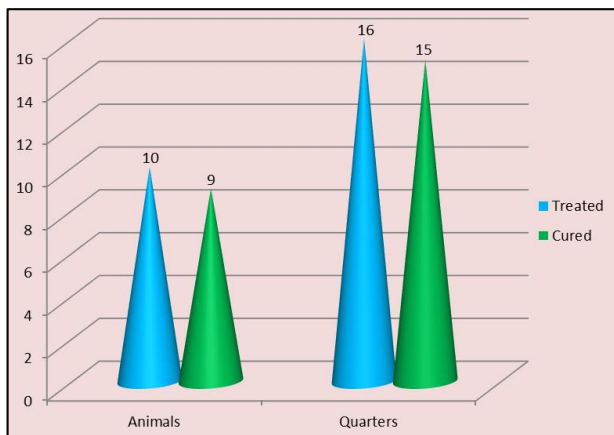
No. of animals (n=10)			No. of quarters (n=15)		
Treated	Cured	% cure	Treated	Cured	% cure
10	9	90.00	16	14	87.50



**Fig 3:** Efficacy of topical therapy with *Moringa oleifera* in SCM affected group I cows

**Table 2:** Efficacy of oral therapy with *Ocimum sanctum* in SCM affected group II cows

No. of animals (n=10)			No. of quarters (n=15)		
Treated	Cured	% cure	Treated	Cured	% cure
10	9	90.00	16	15	93.75



**Fig 4:** Efficacy of oral therapy with *Ocimum sanctum* in SCM affected group II cows

**Acknowledgements**

The technical help rendered by the advisory committee, financial help from P.V. Narsimha Rao Telangana Veterinary University and field help from farming community of periurban areas of Hyderabad are duly acknowledged.

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