




Efficacy of a Homeopathic Complex (Masta-forte+Actino Cure) and Antibiotics in Treatment of Bovine Clinical Mastitis

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ABSTRACT

The present study was aimed to treat bovine mastitis with homeopathic remedies Masta-forte+Actino Cure along with antibiotic therapy. A total 160 animals suffering from clinical bovine mastitis were used for study. All the animals were categorized according to their physical condition of udder as redness, oedematous, fibrosis, bloody milk, white clot in milk, and watery milk. All the animals were grouped into two groups A (n=80) and B (n=80). All the animals were basically treated with higher antibiotics. In group A animals were treated with homeopathic medicine (2 ml. Masta-Forte+2 ml Actino Cure) orally with syringe bid for 20 days along with antibiotic therapy were as group B only treated with antibiotic therapy. Out of 160 animals 124 animals recovered with reduced normal milk. Among group A animals the recovery rate was 90.00% (N=80) whereas group B recovery rate was 65.00% (n=80) animal. In group A animals having no fibrosis, whereas in group B animals having affected quarters were hard and fibrotic in nature. Homeopathy drugs may be used as alternate therapy in organic farming system might be one of the preferred treatment methods.

KEYWORDS: Homeopathy, antibiotic, bovine clinical mastitis, efficacy

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1. INTRODUCTION

Mastitis is one of the most important disease in the dairy industry all over the world (Scheepers and Dijkhuizen, 1991; Olde Riekerink et al., 2008). A survey conducted in the major milk producing countries revealed that 15-20% of cows were affected from the clinical mastitis (Rahman and Islam, 2014). Udder cleanliness, milk yield and per-parturient diseases significantly increased the risk of mastitis in the dairy farms of Bangladesh (Rahman and Islam, 2014). Mastitis leads to significant economic losses caused by reduction in milk yield (Rajala-Schultz et al., 1999, Zoche-Golob and Spilke, 2013) poor milk quality (Houben et al., 1993; Hortet and Seegers, 1998) increased work load (Kossaibati and Esslemont, 1997) early culling (Rajala-Schultz and Grohn, 1999) and high treatment cost (Luhmann, 2007). On other hand, overuse of antibiotics is responsible for a significant increase in prevalence of antibiotic resistance (Kellar et al., 2018). Mastitis when not treated successfully or left untreated will progress to fibrosis. Formation and proliferation fibrous tissue and encircling the pathogen is a defensive mechanism from preventing the spread of pathogens (Chandel et al., 2009). Fibrosed mastitis animals do not usually respond to conventional antimicrobial therapy and the affected quarter is ultimately rendered non-functional resulting in a considerable economic loss to dairy owners (Shah et al., 2010). For over decade antibiotics has been used to treat clinical mastitis, however it is a continuous important disease problem of dairy industry (Smith et al., 1997) and led to development of resistance and failure of antibiotic therapy (Pachuri, 2009). In recent decades, alternative treatment methods (Vaarst et al., 2006; Langford et al., 2009), including homeopathy (Hovi and Roderick, 2000), have been used increasingly for mastitis treatment. Producers and users see advantages in the use of homeopathic remedies to avoid withdrawal periods (Boldyreva, 2003) residues (Enbergs, 1998), or antibiotic resistance (Smith, 2002). Homeopathy is enjoying increasing as an alternative mastitis treatment method, particularly on organic farms (Kellar and Sundrum, 2018). Homeopathy was developed by the German physician Samuel Hahnemann (Hahnemann, 1810) and is commonly referred to as complementary or alternative medicine. According to Hahnemann's observations during drug testing, the simile is able to initiate a healing, which cause symptoms in the examination of healthy people, which are as similar as possible to the symptoms of the patient (Zeise and Fritz, 2019). Homeopathic remedies are potentiated drugs of components of plants or minerals for examples, which effects are tested in drugs trials on healthy people. These results are transferred to veterinary medicine, because there are rarely any homeopathic drug tests on animals (Ekert, 2013). According to homeopathic

understating, the healing power contained in the drug are release through mechanical processing and strengthened with each potentiation steps. According to homeopaths, non-material potencies above D23 (Avogadro's number) act by passing on the energetic information with the help of carrier substance. Now the trends necessities are the use of alternative therapy (homeopathy) for the control and treatment of mastitis through enhancement of immune system of udder (Pachauri, 2000) and reduces the antibiotic residue in milk and milk product. Keeping above facts and earlier study was conducted to evaluate the efficacy of homeopathic drugs along with antibiotic in clinical mastitis (Chandel et al., 2009, Parsani et al., 2015 and Chakraborty et al., 2020) present study was under taken to test efficacy of homeopathic remedies in clinical bovine mastitis along with antibiotic therapy.

2. MATERIALS AND METHODS

2.1. Animal and location

Lactating cross breed dairy cows with clinical mastitis from dairy farmer at Bansakantha district of Gujarat, India for a period of 5 months from January 2021 to May 2021.

2.2. Selection of animals

A list of dairy farm owners from Banas dairy, Palanpur and visited dairy farms. All the animals maintained under stall fed condition. A total of 160 mastitic dairy cows of variable age and lactation were selected. All the animals were treated with antimicrobial therapy (Table 1).

Table 1: Composition of Masta-Forte each 5 ml contains following ingredients

Sulphur	200CH (H.P.I.)	14%V/V
Carbo vegetabilis	200CH (H.P.I.)	14%V/V
Silica Marina	200CH (H.P.I.)	14%V/V
Belladonna	30CH (H.P.I.)	14%V/V
Phytolacca	30CH (H.P.I.)	16%V/V
Calcarea Sulphurica	30CH (H.P.I.)	14%V/V
Chamomilla	30CH (H.P.I.)	14%V/V

2.2.1. Selection of drugs

A complex of homeopathic remedies viz. Masta-Forte and Actino Cure mfd by Ashoka Homoeopathic Laboratory, Hissar, Haryana (125006) were selected for the present study to treat clinical mastitis along with antimicrobial therapy.

2.3. Categorization of affected quarters and milk nature

On physical visual examination of affected quarters were categorized as (i) soft and oedematous swollen of udder, (ii) hard and swollen of udder and quality of milk were



categorized into categories (i) very watery (ii) moderately watery and granular milk (iii) watery and normal appearance of milk (iv) moderately dense and normal appearance of milk (v) more dense and bright colour milk (normal). Further quality of milk were broadly classified into two groups viz mastitis and normal milk respectively.

2.4. Grouping of animals

All 160 animals were categorized into 2 groups viz. group A comprising 80 animals and group B comprising 80 animals. Group A animals were treated with homeopathic remedies viz. Masta-forte and Actino Cure for 20 days along with antimicrobial therapy starting from day of mastitis. Group B animals were only treated with antibiotic therapy. All the animals were striping twice or thrice daily during course of the treatment.

2.5. Administration of homeopathic medicine

Two ml of Masta-forte and 2 ml of Actino Cure both were administered orally with syringe twice daily per animal along with antimicrobial therapy in Group A. Collection, measure and evaluation of milk quality and quantity daily for signs of clinical recovery up to 20 days of treatment and data was recorded in record keeping sheet (Table 2).

Table 2: Composition of Actino Cure each 5 ml contains following ingredients

<i>Amyl nitrosus</i>	30CH (H.P.I.)	6.6%V/V
<i>Stophanthus hispidus</i>	200CH (H.P.I.)	6.3%V/V
<i>Kali iodatum</i>	30CH (H.P.I.)	5.7%V/V
<i>Laurocerasus</i>	200CH (H.P.I.)	6.6%V/V
<i>Mercurius nitrosus</i>	200CH (H.P.I.)	7.2%V/V
<i>Mercurius vivus</i>	200CH (H.P.I.)	6.6%V/V
<i>Curare-woorari</i>	30CH (H.P.I.)	5.8%V/V
<i>Phosphorus</i>	200CH (H.P.I.)	6.6%V/V
<i>Arsenicum album</i>	30CH (H.P.I.)	6.6%V/V
<i>Clematis erecta</i>	200CH (H.P.I.)	7.4%V/V
<i>Aurum iodatum</i>	30CH (H.P.I.)	6.2%V/V
<i>Euphorbium</i>	200CH (H.P.I.)	6.6%V/V
<i>Phytolacca</i>	30CH (H.P.I.)	7.0%V/V
<i>Calendula officinalis</i>	200CH (H.P.I.)	6.6%V/V
<i>Causticum</i>	30CH (H.P.I.)	7.9%V/V

2.6. Data analysis

Descriptive statistical analysis includes percentage, mean, standard deviation and 95% confidence interval were performed. To find out difference among groups, one way ANOVA and simple T Test were performed respectively $p < 0.05$ was considered the level of significance.

3. RESULTS AND DISCUSSION

In both group milk production was slowly increase through the affected teat during the period of study (Table 3). In case of group A it was observed as average milk production was

1.82 ml on day 1 which was increased to 15.50 ml on day 5, 30.20 ml on day 10 and finally on day of 20 it was 77.60 ml and the production performance was differed significantly ($p < 0.01$).

Table 3: Comparative milk production performance among group

Treatment duration day	Group-A (n=80)		Group-B (n=80)	
	Mean±SD	95% CI	Mean±SD	95% CI
D 1	1.82±2.35	1.10~2.54	1.50±2.45	1.20~1.80
D 5	15.50±6.25	12.31~18.69	5.24±3.67	4.36~6.12
D 10	30.20±7.58	23.20~37.20	8.78±4.57	7.26~10.30
D 20	77.60±12.38	55.20~100.00	15.00±6.35	12.60~17.40

Mean±SD (Standard deviation) 95% CI (Confidence interval)

There was no significant rise of milk yield which was 1.50 ml on day 1 to 15 ml on day 20 through the production performance was differed significantly ($p < 0.01$). In Group A animals having five time more milk than group B animals.

Out of 160 animals, 124 animals (77.50%) recover where in Group A and Group B 90.00 and 65.00% respectively. Recovery rate of physical status of udder viz. soft and oedematous; hard and oedematous; white flakes in milk; blood in milk; watery milk in group A was 94.44%, 83.33%, 86.66%, 90.00%, 92.00% where in group B was 60.00%, 53.33%, 70.00%, 80.00% and 65.00% (Table 4). In group A animals 8 animals affected part of udder is soft but milk is very less in amount where as in Group B animals 28 not responded to treatment this animals finally having fibrosis of affected quarter.

The findings of the present study revealed as a promising response 90.00% in the treatment of mastitic milk in lactating dairy animals with homeopathic complex medicine along with antibiotic treatment. Previous study showed variable results in the management of mastitic dairy animals with single homeopathic medicine worldwide (Upadhyay and Sharma, 1999). It has been suggested to use of complex medicines for safe and quick recovery and this type of approach for animal husbandry and treatment has been

Table 4: Physical recovery percentage in various conditions of udder treated with homeopathy along with antibiotic therapy (Group A) and antibiotic only (Group B)

Physical status of udder	Group A			Group B		
	No. of animals treated	No. of animals responded	Recovery %	No. of animals treated	No. of animals responded	Recovery %
Soft and oedematous	18	17	94.44	20	12	60.00
Hard and Oedematous	12	10	83.33	15	08	53.33
White flake in milk	15	13	86.66	10	07	70.00
Blood in Milk	10	09	90.00	15	12	80.00
Watery milk	25	23	92.00	20	13	65.00
Total	80	72	90.00	80	52	65.00

commercially popular in many European countries and India (Chandel et al., 2009; Rastogi et al., 2015). Our findings regarding the recovery of the affected quarter 90.00% of the cows with homeopathic medicine are in agreement with earlier observations of 70–80% cure rate in fibrotic mastitis in cows (Shah et al., 2010). Present study revealed that comparative efficacy of homeopathic and allopathic treatment is found significant in the management of clinical mastitis of crossbred dairy cows are in agreement with earlier observation by Chandel et al., 2009. It is hopeful that the present study results are interesting because there is hardly any prevention and treatment for the management of fibrosed mammary gland except surgery.

In present study recovery rate was higher 90.00% and regain 5 time more milk from affected quarters with homeopathic complex medicine for 20 days treatment along with antibiotic therapy in group A also no fibrosis or hardening of affected quarters. Where in group B without homeopathic complex medicine showed increase milk yield on 20 days almost 5 times less than group A and non responded 28 animals develop fibrosis of affected quarters. The complex homeopathic drugs posses different mode of action *Viz.* *Sulphur* 200c, *Clematis erecta* 200c, *Laurocerasus* 200c, *Euphorbium* 200c and *Causticum* 30c has great antiseptic effect and relaxation of tissues, highly effective in inflammation, pain, rigidity, redness of teats and udder, clots in milk. It is strongly indicated in inflammation of glands, glandular indurations and tumors of breast. *Belladonna* 30c and *Carbo vegetabilis* 200c works on every part of nervous system producing active congestion, reducing hemorrhage from lactogenic surface and ultimately cures mastitis pain, throbbing, redness, streaks radiate from udder and teats. *Phytolacca* 30c, *Calcarea sulphurica* 30c, *Silica marina* 200c, *Chamomilla* 30c and *Arsenicum album* 30c pre-eminently a glandular remedy and very effective for reduction of glandular swelling with heat and inflammation. It has powerful effect on fibrous, mucous and lactogenic tissues and cures mastitis. *Amyl Nitrosus* 30c, *Calendula officinalis*

200c and *Aurum iodatum* 30c to dilate all arterioles and capillaries, which signals for relaxation of the involuntary muscles and helps in reducing hardening of tissues. Most remarkable healing agent, promotes healthy granulation and rapid healing by first intension. *Strophanthus hispidus* 200c and *Curare- woorari* 30c increase the contractile power of all stripped muscles, remove muscular debility and reduce oedema of swollen udder. *Kali iodatum* 30c, *Mercurius nitrosus* 200c and *Mercurius vivus* 200c reducing swelling, congestion and inflammation of all gland. It act prominently on fibrous and connective tissues producing infiltration and prevent fibrosis. *Phosphorus* 200c is best used for pathological manifestations and produces a picture of destructive metabolism where swelling and necrosis tissues. Phosphorus also irritates, inflames and degenerates mucous and serous membranes of mammary tissues produces a picture of destructive metabolism (William, 1906).

Fibrosis occurs when immune cells specially macrophages initiated release of soluble factors that stimulate fibroblasts, which deposit extracellular matrix into the surrounding connective tissue. Recent studies show that epigenetic mechanisms, long non-coding RNAs, may also regulate the fibrosis process (Saayman et al., 2016). Regeneration of fibrous tissue to non-fibrous tissue caused from apoptosis of some myofibroblasts and some of myofibroblasts were reverting to quiescent hepatic stellate cells (Kisseleva et al., 2012). In the previous study, the lactating dairy cows with teat fibrosis treated with both *Silicea* 200c and *Calcarea flour* 200c for a period of 40 days recovered from fibrotic teat state to non-fibrotic teat state that peaked at 83%, which echoes with earlier study (Varshney and Naresh, 2004). The animals with a complex of homeopathy comprising of *Phytolacca* 200c, *Calcareaflurica* 200c, *Silicea* 30c, *Belladonna* 30c, *Bryonia* 30c, *Arnica* 30c, *Conium*30c, and *Ipecacuanha* 30c in equal proportion that shows recovery rate 80% with the recovery period 21–42 days (Upadhyay and Sharma, 1999). *Calcarea flour* is known for its ability to eliminate fibrosis (Edwad, 2002). *Silicea* stimulates



expulsion of foreign body from tissues in chronic low grade inflammatory lesions (Day, 1992; Shah, 2003). Calcaria flour and Silicea was found highly effective in chronic cases of fibrosed mastitis by Upadhyay et al., 1995 and Upadyay and Sharma, 1999.

The present study is an observational study, where assessed the nature of affected quarters and milk quality through palpation of udder by physical estimation. However, the result suggests that combined complex homeopathic treatment with antibiotic therapy to treat mastitis also prevent and revert fibrosis is promising since higher recovery rate along with increase milk production through affected quarters and cost effective as compared to allopathic treatment with antimicrobial drugs that do not prevent fibrotic state of udder. Overall, this study provides a clear concept about the economic and effective treatment through using the complex homeopathic medicines against mastitis and prevention and revert the process of fibrosis in mastitic dairy animals.

4. CONCLUSION

Treatment with homoeopathy complex medicine (Masta-Forte and Actino Cure) for mastitis was easy to administer, very effective, non-invasive, non-antibiotic, non-hormonal and did not have the problem of residue in animal products, as was the case with allopathic treated animals. Although often progressive farmers as well as veterinarians were increasing interest to use alternate therapy in organic farming system and homoeopathy has become one of the preferred alternative methods.

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