

Relationship of mineral and vitamin supplementation with mastitis

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Abstract

Fifty lactating buffaloes were divided into five groups viz. four treated and one control group. The treated groups received Ashwagandha, Vitamin E, Selenium, Copper and Zinc in different combinations. Animals of group IV (provided with 50 gm of Ashwagandha and 500 IU Vitamin E, 800 mg zinc methionine, 250 mg copper sulphate and 5 mg of selenium) showed highest recovery (80.00%) with an average post treatment CMT score point 1.53 ± 0.75 , as compared to rest of the treated groups. Supplementation of trace minerals is only required at low levels to improve immune functions such as decreasing the incidence of mastitis.

Keywords: Mastitis, CMT, Buffalo, Ashwagandha, Trace Minerals, Vitamin E.

Introduction

Mastitis is a constant challenge for all dairy producers. A genetically positive correlation between mastitis and milk production exists. As milk production increases, susceptibility to mastitis also increases. However, on the best managed farms, there are time periods when mastitis flare ups occur. Mineral deficiency is seldom a primary cause of mastitis. Certain trace elements (Cu, Se, Zn, Co) and vitamin (E and A) are known to influence immune responses and their deficiency can be associated with a high incidence of clinical or subclinical infection. Antibiotic resistance, varied sensitivity, withdrawal of milk and economic losses has enforced to explore an alternate and supportive therapy, which will enhance the immune status of the udder by increasing the phagocytic activities of mammary polymorph nuclear and mononuclear cells. So, the present study was undertaken to investigate therapeutic efficacy of Ashwagandha alongwith a few vitamins and minerals and two herbal drugs in clinical mastitis.

Material and Methods

Fifty lactating buffaloes having subclinical mastitis confirmed by California Mastitis Test (CMT) (5) were selected and equally divided into five groups comprising 10 buffaloes in each.

All groups treated as follow:

Group-I -50 gm of Ashwagandha, 500 IU Vitamin E, 800 mg zinc methionine (zinc sulphate)

Group-II -50 gm of Ashwagandha, 500 IU Vitamin E, 250 mg copper sulphate

Group-III -50 gm of Ashwagandha, 500 IU Vitamin E, 5 mg selenium

Group-IV -50 gm of Ashwagandha, 500 IU Vitamin E, 250 mg copper sulphate, 5 mg selenium

Group-V Untreated control

All the treatment were given orally for five days and recovery monitored for twenty days. Therapeutic efficacy was judged based on California Mastitis Test score point.

Results and Discussion

Only 70% of buffaloes got completely recovered in Group-I. In group-II and III recovery rate were 50% and 60% respectively. Remaining animals were also showing signs of recovery but could not be cured during study period, thereby suggesting the beneficial effect of combined use of these elements. Animals of fourth group showed highest recovery (80%) as compared to the rest of three treated groups and CMT score point also decreased significantly post treatment suggesting that this combination have much beneficial effect on the incidence of clinical infection, as compare to the other combinations.

Zinc plays important role in keratinization and maintenance of epithelial tissue. Both the zinc and copper increases the immune system potency (1). Vitamin E and Ashwagandha both are known for immunostimulant property would have resulted in recovery of mastitic buffaloes (4). Zinc methionine and copper sulphate which reduces the somatic cell count and increase the bacterial resistance (7). Smith, et.al.(1984) reported that dry bovines fed

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Table-1. Efficacy of supplementation therapy in buffaloes affected with subclinical mastitis.

Group	Total animals	Post Supplementation status of buffaloes		Average pre-treatment CMT Score	Average post-treatment CMT Score
		Recovered	Not recovered		
I	10	7(70.00%)	3(30.00%)	2.83±0.17	2.00±0.52
II	10	5(50.00%)	5(30.00%)	2.17±0.75	1.67±0.51*
III	10	6(60.00%)	4(40.00%)	2.28±0.75	1.50±0.54
IV	10	8(80.00%)	2(20.00%)	2.66±0.51	1.33±0.75
V	10	0(0%)	10(100%)	2.78±0.61	2.67±0.49

Figures in parenthesis indicate percentage of animals

* Differ significantly

approximately 1000 IU of supplemental vitamin E per day during the 60 day dry period and (or) injected with approximately 50 mg of selenium 21 days before expected calving had fewer case of clinical mastitis with reduced duration compared with bovines not fed vitamin E or injected with selenium. Selenium supplementation had also role in reduction of duration of clinical symptoms (3).

Since dairy cattle are most susceptible to mastitis early in the dry period and after calving, proper feeding of these minerals can help bovine get through this transition period smoothly leading to increased milk production.

Acknowledgement

Authors wishes to thank the animal owners for subjecting their animals as study material and Dean, Veterinary College, Pantnagar for providing necessary facilities.

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