Evaluation of *Calcareo carbonica* derivative complex (M8) on milk parameters in the dairy cow

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ABSTRACT

Background Any dairy herd that continually has a somatic cell count (SCC) above 200,000 cells/ml has an indication of mammary gland inflammation (mastitis). Routine use of antibiotics to prevent mastitis is prohibited by organic farming regulations. This limitation has lead researchers to focus on cows natural defense mechanisms [1]. *Calcareo carbonica* derivative complex (M8) is a complex high diluted medication comprised of comprised of *Calcareo carbonica* 16x, *Aconitum napellus* 20x, *Arsenicum album* 18x, *Asa foetida* 20x, *Conium maculatum* 17x, *Ipecacuanha* 13x, *Phosphorus* 20x, *Rhus toxicodendron* 17x, *Silicea* 20x, *Sulphur* 24x, and *Thuya occidentalis* 19x. Dilution procedures have followed standard methodology described at the Brazilian Homeopathic Pharmacopoeia. This medication has enhanced immune system responses both *in vitro* and *in vivo* in a murine model [2].

Aims In the present study, we investigate the response of dairy cows after M8 treatment.

Methodology The study was performed as a randomized, observer double-blinded and placebo-controlled trial, with a stratified design, using lactation number and SCC as stratification factors. The study sample consisted of 42 lactating dairy cows (Holstein) in one high producing dairy herd with 52 cows in milk in southern Brazil, divided into two experimental groups (n=21). Exclusion criteria were cows with clinical mastitis or receiving any other medical treatment. Pre- and post-milking teat disinfection was practiced in the herd. All cows were clinically examined, with udder and milk samples being appraised according to Rosenberger (1990) [3]. During 3 months one group received daily M8 treatment, the other placebo. Oral administration of 5 ml/day/cow was performed using an automatic dosage dispenser. Monthly, milk production, SCC, fat and total protein content were carefully recorded for each animal by an official milk recording program. SCC were log transformed for analysis. ANOVA and Tukey test were used to compare the averages. The Bartlett's test was used for homogeneity of variance evaluation.

Results: There were no significant differences ($p=0.435$) among the groups in the initial evaluation (values of $SCC \times 10^3$: Placebo 67 ± 80 ; Treatment 111 ± 153). After 3 months, the M8 treated group showed a decrease (68 ± 47 , $p = 0.047$) in SCC when compared with control group (392 ± 687). Fat and protein did not differ between groups and time analyzed. Milk production decreased in the placebo group during time (Before: $35,0 \pm 6,7$ kg; After: $28,7 \pm 4,3$ kg), whereas the treatment group did not change total amount (Before: $28,7 \pm 6,5$ kg; After: $26,4 \pm 5,7$ kg; $p > 0.05$).

Conclusions These results indicate that the M8 influenced positively SCC and suggest that it may be considered as a possible tool to promote bovine mastitis prophylaxis.

Keywords: *Calcareo carbonica* complex, mastitis, somatic cell count

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Support: The study received a CNPq scholarship (PIBIC)

Conflict of interest: authors declare there is no conflict of interest

Received: 01 June 2012; Revised: 08 August 2012; Published: 30 September 2012.

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How to cite this article: Brandão ALP, Polo G, da Lozzo EJ, Buchi DF, de Oliveira CC, Weber SH, Ollhoff RD. Evaluation of *Calcareo carbonica* derivative complex (M8) on milk parameters in the dairy cow. *Int J High Dilution Res* [online]. 2012 [cited YYYY Month dd]; 11(40):138-139. *Proceedings of the XXVI GIRI Symposium; 2012 Sep 20-22; Florence (Italy).* GIRI; 2012; Available from: <http://www.feg.unesp.br/~ojs/index.php/ijhdr/article/view/593/581>