

## Study the efficacy of Galactin Vet Bolus on milk yield in dairy cows

Baig M.I.<sup>1</sup>and Bhagwat. V.G.<sup>2</sup>

Department of Livestock Production and Management  
Bombay Veterinary College, Parel, Mumbai, India

### Abstract

Efficacy study of GALACTIN VET bolus (5 boli once daily for 10 days) was conducted in moderate milk producing Holstein and Jersey crossbred cows. Improved Milk yield, CLR, Fat % and SNF % supported GALACTIN VET bolus to be safe galactagogue in dairy cows.

**Keywords:** Milk yield, Holstein Friesian, Jersey, Galactagogue.

### Introduction

Galactagogues (or lactagogues) are medications or other substances believed to assist in the initiation, maintenance, or augmentation of maternal milk production. Milk production is a complex physiological process involving physical and emotional factors and the interaction of multiple hormones, the most important of which is believed to be prolactin. During stress milk production reduces. Milk production itself is stress for lactating cows. With parturition and expulsion of the placenta, progesterone falls and a full milk supply (Lactogenesis) is initiated (Neville et al., 1977). Through interaction with the hypothalamus and anterior pituitary, dopamine agonists inhibit, and dopamine antagonists increase prolactin secretion and thereby milk production (endocrine control). Thereafter, prolactin levels gradually decrease but milk supply is maintained or increased by local feedback mechanisms (autocrine control) (Lawrence et al., 1999). Therefore, an increase in prolactin levels is needed to increase, but not maintain, milk supply. The medications used often exert their effects through antagonism of dopamine receptors, resulting in increased prolactin (Gabay, 2004).

The objective of the present study is to assess the effect of polynutrient formulation, GALACTIN VET bolus of The Himalaya Drug Company, Bangalore contains powders of *Leptadenia reticulata*, *Asparagus racemosus*, *Withania somnifera*, *Arundo donax*, *Cissampelos pareira*, *Foeniculum vulgare*, and extracts of *Eclipta alba* and *Solanum nigrum* on quality and quantity of milk in dairy cows.

### Materials and Methods

The present study was conducted in 14 healthy Holstein and Jersey crossbred, moderate milk producing cows of different lactations and age groups. All the animals used in study were housed, fed and managed in accordance with standard managerial practices. The animals chosen for the study had attained peak milk yield and were in the declining phase (more than 120 days after calving) of milk production. The milk yield of each cow was recorded on a daily basis for a period of 32 days (i.e. before treatment (7 days), during treatment (10 days) and after treatment (15 days). Corrected lactometer reading (CLR), fat and solid not fat (SNF) estimations were done before, during (two times) and after treatment.

GALACTIN VET bolus was administered orally, at a dose of 5 boli once-a-day for 10 days. The average increase in milk yield was studied. Statistical analysis of data was done in GRAPHPAD prism version 4.01 using Bonferroni's Multiple Comparison Test.

### Results

GALACTIN VET bolus improved milk yield in dairy cows (Table 1). Increased trend of milk yield of each animal on a daily basis was noticed from day 2 of feeding GALACTIN VET bolus (Figure 1). There was a significant ( $p < 0.0001$ ) increase in milk yield during and after treatment period as compared to pretreatment period (Figure 2). Overall, GALACTIN VET bolus improved milk yield during treatment period to the extent of 9.12% compared to pre treatment period. However, GALACTIN VET bolus

1. Professor, 2. Corresponding author, Research Scientist, R&D Center, The Himalaya Drug Company,

improved CLR reading, Fat% and SNF% by 1.85%, 1.19% and 1.17% respectively during the treatment period as compared to pretreatment period. No significant effect on SNF%, FAT% and CLR readings was observed.

#### Discussion

A number of studies have been carried out on the galactopoietic properties of the plants in animals. The constituent herbs of GALACTIN VET bolus possess potent galactopoietic action. The study shows that there is gain in milk yield from feeding GALACTIN VET bolus to cows.

**Leptadenia reticulata:** Lactogenic effect of stigmaasterol and ether fraction isolated from *Leptadenia reticulata* were studied on lactating rats. On consideration of results on parameters of pup weight, body weights of mother rats, photomicro-graphic studies of lactating mammary glands on the 23rd day, secretory rating, parenchyma percentage, glycogen contents and protein contents of mammary glands, it was observed that both the principles had lactogenic effect on lactating rats (Anjaria et al., 1975). Crude *Leptadenia reticulata* administered to five cows in the dose of 1.5gm/cow/b.i.d for 15 days produced an increase in milk yield in four out of five cows with a net gain of 10.5% (Anjaria, 1980). Clinical study of *Leptadenia* tablets (2 tablets 3 times a day) on 50 puerperal mothers showed, there was a marked improvement in the flow of milk, and fat content when compared to the control group mothers (Kasturi et al., 1980).

**Asparagus racemosus:** Five hundred grams of fresh roots of *Asparagus racemosus* per day, from 21 day after calving till 50 days was fed to lactating buffalos, which resulted in a significant increase in milk yield (Patil and Kanitkar, 1969). Lohar et al. (1991) demonstrated that *Asparagus racemosus* roots is a rich source of minerals and trace elements such as calcium, copper, magnesium, iron, manganese, nickel and zinc. Presence of calcium in the powder correlates with the analytical results for galactogogues.

The effects of the crude alcoholic extract of *Asparagus racemosus* 250mg/kg, intramuscularly were studied in post-partum, estrogen-primed and non-primed rats. The extract increased the weight of mammary glands in post-partum and estrogen-primed rats and uterine weight in estrogen-primed group. Increase in the weights of adrenals coupled with depletion of ascorbic acid suggests the release of pituitary adrenocorticotrophic hormone. The growth of the lobulo-alveolar tissue and milk secretion in the estrogen-primed rats may be due to action of released corticoids or prolactin (Sabnis et al., 1968).

**Withania somnifera:** Antistressor properties of *Withania somnifera* (100mg/kg b. wt) in adult Wistar albino rats and cold water swimming stress test indicate that the treated animals show better stress tolerance (Archana and Namasivayam, 1999). **Arundo donax:** It contains bufotenidin and eleagine and is used as a stimulant in case of menstrual discharge and diminished milk secretion (ICMR 1976).

**Cissampelos pareira:** *Cissampelos pareira* has potent antioxidant and oxidative stress activities. In various studies, *Cissampelos pareira* significantly reduced the lipid peroxidation and inhibited the decrease in antioxidant enzyme levels (superoxide dismutase and catalase) on prior administration to castor oil-induced fluid accumulation in mice (Amresh, et al., 2004).

**Foeniculum vulgare:** Oral administration (200 mg/kg) of *Foeniculum vulgare* fruit methanolic extract exhibited inhibitory effects against acute and subacute inflammatory diseases and type IV allergic reactions and showed a central analgesic effect. Moreover, it significantly increased the plasma superoxide dismutase (SOD) and catalase activities and the high density lipoprotein-cholesterol level (Choi, 2004).

**Eclipta alba:** The hepatoprotective effect of the ethanol/water (1:1) extract of *Eclipta alba* has been studied at subcellular levels in rats against CCl<sub>4</sub>-induced hepatotoxicity. *Eclipta alba* significantly counteracted CCl<sub>4</sub>-induced inhibition of the hepatic microsomal drug metabolizing enzymes. The loss of hepatic lysosomal acid phosphatase and alkaline phosphatase by CCl<sub>4</sub> was significantly restored by *Eclipta alba*. The study shows that hepatoprotective activity of *Eclipta alba* is by regulating the levels of hepatic microsomal drug metabolizing enzymes (Saxena et al., 1993).

**Solanum nigrum:** The presence of plant extracts of *Solanum nigrum* and *Cichorium intybus* in the reaction mixture containing calf thymus DNA and free radical generating system protect DNA against oxidative damage to its deoxyribose sugar moiety. These studies suggest that the observed hepatoprotective effect of these crude plant extracts may be due to their ability to suppress the oxidative degradation of DNA in the tissue debris (Sultana et al., 1995).

The above observations are in agreement with the findings of Ramesh et al., (2000) and Rajeshwari (2000). Thus, the herbs of GALACTIN VET bolus in synergy contributed towards improvement of milk yield.

#### Conclusion

GALACTIN VET bolus improved milk yield, Fat%, SNF% and CLR reading in dairy cows. There is no

Table 1: Average milk yield (in liters), Fat (%), SNF (%) before, during and after treatment

Parameters	Before treatment (7 days)	During treatment (10 days)	After treatment (15 days)
Average milk yield	7.56 ± 0.60	8.25 ± 0.64	8.26 ± 0.67
CLR reading	27	27.5	28
Fat%	4.20	4.25	4.25
SNF%	8.5	8.6	8.6

adverse effect of GALACTIN VET bolus on composition of milk. Also, there were no adverse effects on health of animals during the study period. Hence, GALACTIN VET bolus can be used safely as galactogogue in dairy animals.

**Acknowledgement**

The encouragement provided by The Himalaya Drug Company, Bangalore, for supplying the trial material GALACTIN VET bolus for this trial is thankfully acknowledged.

**References**

1. Amresh, Reddy GD, Rao CV, Shirwaikar A. (2004): Ethnomedical value of *Cissampelos pareira* extract in experimentally induced diarrhoea. *Acta Pharm.* 54(1): 27-35.
2. Anjaria J.V. (1980): Some pharmacological studies on the isolated principles of *Leptadenia- reticulata*" Abstracts of ph. D, Thesis, Gujarat Agricultural University Research Journal, 6(1): 53-54.
3. Anjaria, J.V., Varia, M.R., Janakiraman, K, and Gulati, O.D. (1975): Studies on *Leptadenia reticulata*: Lactogenic effect on rats. *Ind J of Exp. Bio.* 13: 448-449.
4. Archana, R, and Namasivayam A. (1999): Antistressor effect of *Withania somnifera*. *J. Ethnopharmacol.* 64: 91-93.
5. Choi E.M., Hwang, J.K. (2004): Antiinflammatory, analgesic and antioxidant activities of the fruit of *Foeniculum vulgare*. *Fitoterapia* 75(6): 557-565.
6. Gabay, M. P. (2004): Galactogogues: Medications that induce lactation. *J. Human Lactation* 18(3): 274.
7. ICMR – Medicinal Plants of India. Indian Council of Medial Research, New Delhi, (1976) 1: 98-99.
8. Kasturi Lal, Bupinder Singh.,Yudhishter V.G., Bhupinder Singh.,Tiku, C.N. and Jamwal D.S.A. (1980): Controlled trial of *Leptaden* in lactational failure and an experimental study in lactating rats. *The Indian Practitioner* Oct: 557-564.
9. Lawrence, R.A, Lawrence, R.M. (1999): *Breastfeeding: A Guide for the Medical Profession*, 5th edition , St. Louis, Osby.
10. Lohar, D.R., Chaturvedi, D. and Varma, P.N. (1991): Mineral elements of a few medicinally important plants. *Indian Drugs* 29(6): 271-273.
11. Neville, M.C., Morton, J., Unemura, S. (2001): Lactogenesis: Transition from pregnancy to lactation. *Ped Clin North* 48: 45-52.

12. Patil, A.B., and Kanitkar, U.K. (1969): *Asparagus racemosus* willd-form Bordi, as a galactogogue in buffaloes. *The Indian Veterinary Journal* 46: 718-721.
13. Rajeshwari, Y.B. (2000) - Effect of Feeding Galactogogue to Rabbit Does., International Conference on Small Holder Livestock Production Systems in Developing Countries, KILA, Mulamkunna-thukavu, Thrissur, Kerala, India, 24th-27th November, 2000.
14. Ramesh, P.T., Mitra, S.K., Suryanarayna, T. and Ashish Sachan. (2000): Evaluation of Galactin, A Herbal Galactogogue Preparation in Dairy Cows. *The Veterinarian* 24(Feb.): 15
15. Sabnis, P.B., Gaitonde, B.P. and Maya Jetmalani. (1968): Effect of alcoholic extract of *Asparagus racemosus* on mammary glands of rats. *Indian Journal of Experimental Biology* 6:55-57.
16. Saxena, A.K., Singh, B. and Anand, K.K. (1993): Hepatoprotective effects of *Eclipta alba* on subcellular levels in rats. *J. Ethnopharmacol.* 40(3): 155-161.
17. Sultana S., Perwaiz S., Iqbal M and Athar M. (1995): Crude extracts of hepatoprotective plants, *Solanum nigrum* and *Cichorium intybus* inhibit free radical-mediated DNA damage. *J. Ethnopharmacol.* 45:189-

Figure 1: Efficacy study of the Galactin vet bolus in lactating dairy cows (n=14)

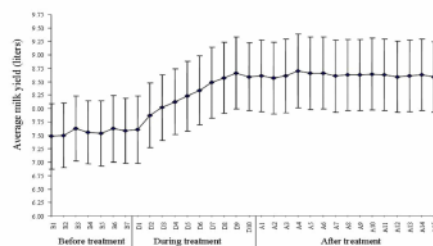
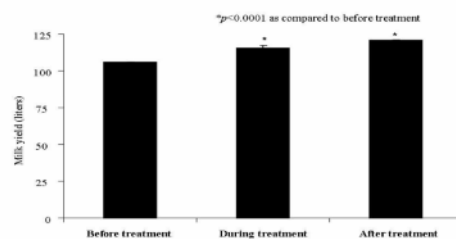


Figure 2: Efficacy study of the Galactin vet bolus on milk yield in dairy cows (n=14)



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