

Effect of Supplement Feeding of Shatavari on Lactating Buffaloes

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ABSTRACT

A study was conducted in adopted villages of KVK Bundi to assess the effect of supplementing shatavari (*Asparagus racemosus*) feed on performance of lactating buffaloes. Twenty lactating buffaloes in mid lactation with similar age, body weight and milk yield were selected from dairy farms of the local farmers and divided into two groups of ten animals each. Control group was maintained as per farmer's practices (feeding of 3 kg cotton seed cake along with wheat straw), while groups comprising feeding of wheat straw + shatavari powder 50gm/day/animal up to 60 days. Result revealed that 19.67 per cent higher average milk yield was recorded in buffaloes feeding under group (7.36 kg/day) as compared to (6.15 kg/day). Increase in the income by feeding Shatavari came to Rs. 50.50/day/animal. It was concluded that feeding of Shatavari along with wheat straw improves milk yield and fat percent as well as reproductive performance in lactating buffaloes.

KEYWORDS

Water buffaloes, Lactation, Supplements, Shatavari, Milk Yield

Livestock sector plays a vital role in the rural economy as providing family income and generating gainful employment in the rural sector (Deokaran *et al.*, 2019). Livestock contributes 4.0 % in total GDP during the year of 2018-19. India is leading country in total milk production. During 2018-19, milk production in India is 187.7 million tons and per capita availability is 394 g/day (DADE, 2018). During the last two decades, India has emerged as world's top most nations in the dairy sector and has witnessed rapid development in the milk production (Singh *et al.*, 2020). On other hands, the productivity of dairy animals in India is very low because of various factors like underfeeding, malnutrition, various diseases, stress, etc which hamper the economy of the dairy industry (Choudhary *et al.*, 2020).

Herbal feed additives could either effect feeding pattern or effect the growth of favorable microorganisms in the rumen or stimulate the secretion of different digestive enzymes, which in turn may improve the efficiency of nutrients utilization or stimulate the milk secreting tissues in the mammary glands, resulting it improves productive and reproductive performance of dairy animals (Bakshi and Wadhwa, 2000). Herbs are concentrated foods those provide vitamins, minerals and other nutrients that sustain and strengthen the human and animal body. Indian history has very rich in herbal medicine and one of the oldest surviving systems of healthcare in the world known as Ayurveda. These herbs were being used since *pre-vedic* time because they were safe to use, cheap and easily available, has no side effect and no residual effect in milk (Krishna *et al.*, 2005). So, their inclusion in the diet should be encouraged to enhance animal's performance, improve feed efficiency, maintain health and alleviate the adverse effect of environmental stress. A galactagogue is a substance that promotes lactation in dairy animals. It may be synthetic, plant-derived or endogenous. These medicines increase *prolactin* secretion by antagonizing dopamine receptors (Gabay, 2002).

Shatavari (*Asparagus racemosus*), is an ethno-pharmacologically acclaimed ayurvedic medicinal plant of *Asparagaceae* family, and called as 'Queen of Herbs' in Ayurveda. Its medicinal usage has been reported in the Indian and British pharmacopoeias and in the traditional systems of medicine such as ayurveda, unani and siddha. Ancient ayurvedic texts like charak samhita, susruta samhita and astanga samhita has also mentioned its beneficial effects (Anonymous, 1987). Bharti and Kumar, (2019) reported that it is a common species of asparagus distributed throughout India with 1 to 2 m in height. The genus *Asparagus* contains about 300 species around the world and out of these 22 species are found in the India. *Asparagus racemosus* is the most commonly used herb in traditional medicine due to the presence of steroidal *saponins* and *sapogenins* in various parts of a plant (Krishna *et al.*, 2005). shatavari root contains 4.60 to 6.10 per cent protein, 36.80 to 47.50 per cent carbohydrates, 3.10 to 5.20 mg/g phenols, 4.80 to 5.10 mg/g tannins, 4.10 per cent saponin and 6.50 to 7.40 per cent ash (Mishra *et al.*, 2005). Berhane and Singh (2000) reported the DM, CP, EE, CF, Ash and NFE of Shatavari root powder to be 91.0, 3.85, 0.66, 8.32, 13.15 and 74.02 percent, respectively. The general

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pharmacology of Shatavari are galactogogue and mammogenic, it enhances the blood prolactin level and stimulates the cellular division of mammary gland (Kumar *et al.*, 2008). The objective of the present study was to assess the effect of Shatavari root powder as feed supplement in the diet of indigenous buffaloes in Bundi district of Rajasthan (India), where mostly animal keepers use only cottonseed cake as concentrate rations.

The present study was carried out during 2018-19 and 19-20 in adopted villages of district Bundi, Rajasthan by Krishi Vigyan Kendra, Bundi. Firstly, a survey was conducted to assess the feeding, milk production and physical health status of animals in different villages and found that the feeding pattern for animals in Bundi district of Rajasthan was very poorly managed. Most of the animal keepers were not using balanced ration, they provide only cotton seed cake as concentrate ration. Only cotton seed cake had not sufficient to provide required nutrients to animals and it was costly to animal keepers. So, the milk production and productivity were very low and costly in this region. Keeping in mind the above problems, a study was conducted by Krishi Vigyan Kendra, Bundi in adopted villages in blocks of Hindoli and



Fig. 1: Feeding of Shatavari on lactating buffaloes of adapted farmers

Bundi to assess the effect of supplementing shatavari (*Asparagus racemosus*) feeding on the performance of lactating buffaloes on farmer's field. For this purpose, 20 lactating buffaloes in mid lactation with similar age, body weight and milk yield (5-7 years old, average body weight of buffalo in the range of 400-450 kg and milk production level 6-6.5 liter /day and.) were selected and divided into two groups having ten animals each. The first control group (T₁ farmer's practices) was fed wheat straw (adlib.), with 3 kg cotton seed cake only, while the second group (T₂ treatment groups) comprises supplemented at 50 gm Shatavari root powder per animal per day for 60 days in addition to farmers practice. Shatavari root powder was provided by Krishi Vigyan Kendra, Bundi. Most of the farmers sold their milk one time at milk collection centre of cooperative dairy in morning and in evening time they used their production at home for fulfillment of the domestic needs. Milk production data were collected on daily basis.

The present study was undertaken to know effect of feeding shatavari on milk yield of lactating buffaloes under field conditions. After 60 days of experimental period, the data was analyzed and the average milk yield was recorded 6.15 kg/day in group T₁ and 7.36 kg/day in group T₂ (Table 1). The results revealed that the average milk yield was 20 per cent higher in group T₂ than in groups T₁ (6.15). It was due to the general pharmacology of Shatavari galactogogue and mammogenic; it enhances the blood prolactin level and stimulates the cellular division of milk producing cells in mammary gland (Kumar *et al.*, 2008). The results were in close conformity with Tanwar *et al.*, 2008 who found that the enhancing effect of shatavari on milk production in buffaloes and cows by 9.90 per cent (0.8 ± 0.34 kg/day) and 12.72 per cent (1.32 ± 0.15 kg/day), respectively. Singh *et al.*, 2012 reported in Murrah buffaloes by 10.68 per cent. All those studied the shatavari feeding effect and reported positive and beneficial effects. In Various studies revealed that the shatavari can be fed to these animals without any adverse effects. Study also revealed that the shatavari fed group has not only increased the milk yield but also increased in physical health status and reproductive efficiency. Kumar *et al.*, 2008 reported that the shatavari can fulfill the requirement of nutrients of animal with cottonseed cake and it enhances the blood prolactin level and stimulates the cellular division of milk producing cells in mammary gland.

Table 1: Effect of shatavari on milk production in buffaloes

Technology Option	Average milk yield (kg / day / animal)	Average fat percent
T ₁ - Wheat straw with 3 kg of cotton seed cake only (Production level 6.15 liter /day and average body weight of buffalo is approximate 400 kg.) -Farmers practice	6.15	6.58
T ₂ - Wheat straw + 3 kg of cotton seed cake + Shatavari root powder 50gm /day /animal for 60 days.	7.36	6.97

Table 2: Cost of milk production in different treatments

Treatments	Wheat Straw		Cotton Seed Cake		Shatavari Feeding		Total Cost (Rs.)	Average Milk Production (kg/day/animal)	Increase in Milk Yield (kg/day/animal)	Increase in Income (Rs.)
	Qty. (kg.)	Cost (Rs.)	Qty. (kg.)	Cost (Rs.)	Qty. (g.)	Cost (Rs.)				
T1	8.0	32.0	3.0	54.0	-	-	86.0	6.15	-	
T2	8.0	32.0	3.0	54.0	50.0	10.0	96.0	7.36	1.21	60.50

- Purchase rate of wheat straw Rs 4.0/kg
- Purchase rate of cotton Seed Cake- Rs.18.0/kg
- Purchase rate of Shatavari for treatment – Rs.10 / 50gm
- Sell rate of Milk = 50 Rs / kg

Data revealed in Table 2, showing the cost incurred in milk production was higher in group T₂ (96.0/day) than group T₁ (86.0/day) due to additional cost of shatavari root powder in group T₂. Further the increase in milk income per day per animal was 19.67 per cent higher in group T₂ (Rs 368.0/day) than the group T₁ (Rs 307.50/day). However, on the basis of findings, farmers can earn an additional income of Rs. 60.50 per day per animal by spent of additional Rs 10.0 for shatavari powder feeding. More milk can produce from indigenous buffaloes at low cost by feeding shatavari with cottonseed cake. These findings were closed conformity with Tanwar et al., 2008; Patel et al., 2013 and Jingar et al., 2018.

It was concluded that feeding of shatavari root powder along with cotton seed cake and wheat straw enhanced the milk yield and the animal status showing excellent sign of health, such as improved hair coat condition, shining in skin, brightness in eyes, moist muzzle and always activeness. Therefore, it can be used as a valuable herbal feed supplement for buffaloes, particularly under low input livestock production system, where livestock owners fed only cotton seed cake as concentrate or unbalanced concentrate ration, because the only single cake or un balanced concentrate ration can not fulfill the nutrient the nutrient requirement of animal.

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