Effects of Feeding *Asparagus Racemosus* on Animal Product and Productivity

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ABSTRACT

Asparagus racemosus is a woody climber plant that grows in different tropical climate areas throughout India. The plant extends to a height of above 2 metres tall and prefers to take root in gravelly, rocky soils high up in lowlands, at 1,400–1,500 m elevation. *Asparagus racemosus* is one of the feed additives in livestock production in ancient history. The plant possess having galactogogue and medicinal properties. The present day *Asparagus racemosus* has been scientifically validated as reproductive system tonic, immune modulator, antioxidant and anti-stress. The herb when used as animal feed additives, improved feed palatability and animal productivity especially milk yield and milk composition, early calving, weight gain of broiler. Asparagus racemosus herbs used as increasing milk supply, helping the let-down and even re-lactation. Supplementation of shatavari root powder with concentrated feed per day at the time of milking ($p>0.05$) increases milk yield, fat, protein and total solid. The puberty age is attained early in the treatment group than control group. Similarly the cow was positively lower age at first service than control group. Therefore the review attempts to identify the effect of feeding *Asparagus racemosus* on animal products and productivity.

Keywords: *Asparagus racemosus*, animal products, shatavari, milk yield, feed additives

1. INTRODUCTION

The rise of population and their change towards animal product as a diet is causing demand for proteins of animal origin such as meat, milk, eggs and thus is putting pressure on animal sector which hamper the economy of animal productivity. To maximize the animal productivity and to increase the production of animal products in individual animals for better profits, different drugs, hormones, and feed supplements have been tried Mishra *et al.* (2005). The need of shatavari supplement in animal production is an ancient history. Now a days, shatavari is widely used as livestock feed supplement, having different feathers and medicinal properties (Ayurveda) among these *Asparagus racemosus.* The present day *Asparagus racemosus* has been scientifically validated to improve reproductive system tonic and act as immune modulator, antioxidant and anti-stress (Kumar 2008).

Asparagus racemosus is a species of asparagus plant that has been used for many centuries for Ayurvedic medicine (Krishana et al., 2005). In India, *Asparagus racemosus* herb name is given Shatavari, Satavar and Shatmuli meaning 'a woman who has a hundred husbands' (curer of many diseases). Asparagus racemosus is one of the most common herbs in traditional medicine due the presence of sapogenins and steroidal saponins in the shatavari plant. According to Mishra *et al.* (2005) report as *Asparagus racemosus* plant have different elemenst containing carbohydrates, protein, phenols, tannins, saponin and ash.

Asparagus racemosus is a woody climber plant that grows in different tropical climates area throughout India, Nepal, Sri lanka Himalaya Australia and Africa. The plant extends to a height above 2 metres tall and prefers to take root lowlands area, altitude1, and 400–1,500 m elevation. It was discovered by botanist in 1799 because of its numerous needs the demand for *shatavari* is constantly on the rise. Because of destructive harvesting, combined with habitat destruction, and deforestation, the plant is now “endangered" in its natural. According to biodiversity statistical data, 300 species *of Asparagus racemosus* are found around the world and out of this, 22 species are present in India. The family of an indigenous medicinal plant is Liliaceae. (Chopra et al., 1956; Anonymous, 1976)

Asparagus racemosus are widely used as animal feed additives, improved feed palatability, utilization and animal productivity due to these increased the animal products and productivity especially milk yield and milk composition (Kumar, 2015), early calving

(Mohabbat, 2012), broiler weight gain, feed conversation efficiency and increase immunity. Galactogogue are a substance that used to induce, maintain, and increase milk production, both in human and animal. Likewise *Asparagus racemosus* herbs are used in, increasing milk supply and even re-lactation.

2. Asparagus Racemosus

Asparagus racemosus is a rich source of folic acid, potassium, dietary fiber. It poses four saponins. It is cardio tonic, hypoglycaemic, antioxytocic to uterine contraction, antioxidant (Palep, 2003). *Asparagus racemosus* root possesses a number benefit. According to Ayurveda, many diseases can be treatment which includes the loss of libido, reproductive disease (infertility), hyperacidity, menopausal problems, threatened miscarriage, stomach ulcers and bronchial infections.

2.1 Cultivation and Harvesting of *Asparagus racemosus*

Asparagus racemosus is branched herbaceous and perennial plant that grow until to reach the height of 1 to 2 meters. The plant is cultivated up to 1300 meters above sea level in tropical and subtropical parts of India. The plants usually grow in a variety of soils. However, sandy well drained and soil rich in organic matter is more suitable for proper plant growth. The plant can be propagated by seeds and divisions of rhizomatous disc. Tropical humid climate is suitable for its cultivation. It needs a temperature of 10-45 degree and annual rainfall of 250cm. Soil pH 6-8.5 is suitable for its cultivation. The frosty area is not suitable for its cultivation (Sharma et al., 2000). Harvesting of *Asparagus racemosus* is done in September-October and the plants are harvested when seed ripen. The plant has rotational period of 3 years (Dutta, 2007). One hectare of land can produces up to 3000kg. Roots can be washed properly to avoid any foreign materials and cut into small pieces and sent to the market or industries.

3. Effect of feeding *Asparagus racemosus* on animal production and productivity

The adoption of shatavari feed supplementation in animal production used as ancient history (somkuwar and pawar, 2005). Shatavari *may* constitute a very important component of livestock feed because of higher content of nutrients and palatability. And also a good source of folic acid, potassium, dietary fibre. The plant have been used to improve feed palatability, utilization and animal productivity. The present day *Asparagus racemosus* are used as animal feed additives, having galactogogue properties. Because of its galactogogue properties it is used to increase milk supply, helping the let-down, keeping the milk "fresh", and re-lactation. Therefore *Asparagus racemosus* used to enhance animal products and productivity performance.

Supplementation of shatavari root powder with concentrated feed per day at the time of milking positively increased ($p>0.05$) on milk fat content, milk protein content, total milk solid content and milk yield of cow. There are reports to indicate that *shatavari* enhanced significantly added (10.43%) on daily milk production in buffaloes (Kumar et al., 2015). Similarly (Patel and Kanitkar, 1969) was observed significantly increase was observed ($p<0.01$) on milk yield in buffaloes by feeding five hundred grams per day with concentrate. According to Mahantra *et al.* (2003 supplementing shatavari feed can increase milk yield by 25%.

According to Somkuwar (2005) and Tanwar *et al*. (2008) supplementation of shatavari on feed significantly improved on milk yield in buffaloes and crossbred cows, but the response of feeding the herbs to buffaloes is higher than cows. *Asparagus racemosus* feed positively increases dry matter intake in lactating cow (Barhane and Singh, 2002).

4. **Age at puberty**

Sejrsen and Purup (2000) investigated that the growth rate and age at maturity are directly linked with reproductive performance of a female. That means as the animal age early at maturity , growth of cow will produce calve early, increase the number of calf and thus will produce high amount of milk throughout her life. The growth rate and body weight at sexual maturity is of an extreme importance for milk production (Sabbar *et al.,* 2000). The animals will show in to late maturity, long dry period and calving interval. According to Mohabbat, (2012) the report on the effect of feed supplement Shatavari, the animal decrease age at puberty and age at first services. Therefore the report shows that the feed supplement of Shatavari significantly improved the sexual maturity.

5. **Poultry**

Nowadays, poultry farming has a source of tremendous benefit of income generation consumption and socio-economic resume in India. Present-day researches are being implemented by scientists regarding different herbal preparations, for increasing the productivity of eggs and meat, because it is cheaper feed additive and improve the overall weight gain of the chicken and increased their feed conversion efficiency within short period of time. These also possess adequate immune-modulatory effects which augment the resistance of the birds against various infectious diseases. According to Sarag and Khobragade (2003) report that supplementation of *Asparagus racemosus* enhanced the body weight gain of broiler chicken and increased feed conversion efficiency. Similarly Kumari *et al.* (2012) also reported *Asparagus racemosus* root extract and feeding of broiler chicken, increase the body weight gain and feed conversion efficiency. These effect indicate significantly ($P<0.01$) increase in both humoral and cell mediated immune responses of the birds.

6. CONCLUSION

Generally the effects of supplemented of *asparagus racemosus* on animal will increase the animal product and productivity. *Asparagus racemosus is* the best herbs that act as *Ayurveda* and galactogogue property and reproductive tonic. The plant can increase the animal products and productivity especially milk yield and milk composition, early calving, broiler weight gain, feed conversation efficiency. Use of *shatavari herb* for human being is already well known and it is used as a multi-purpose medicinal agent. Utilization of *asparagus racemosus* will not only improve productivity and health of animals but also support the farmer's generate income through production of more milk ,early calving and weight again of broiler chicken per animal.

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