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Popular Article

Advantages of Herbal Supplementation in Livestock

Divyanshu Singh Tomar¹, Ajay Durge², Jigyasha³ and Raghav Parashar⁴

^{1,2}PhD Scholar, Livestock Production Management Division, ICAR-NDRI, Karnal

³PhD Scholar, Animal Genetics and Breeding Division, ICAR-NDRI, Karnal

⁴Veterinary Polytechnic Diploma College, Bhopal

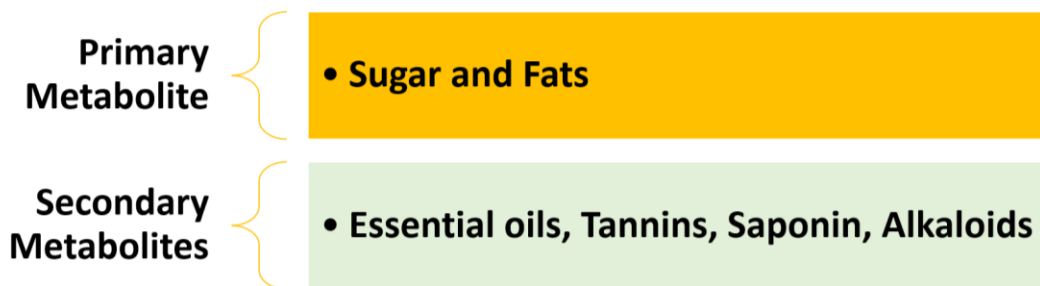
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Introduction

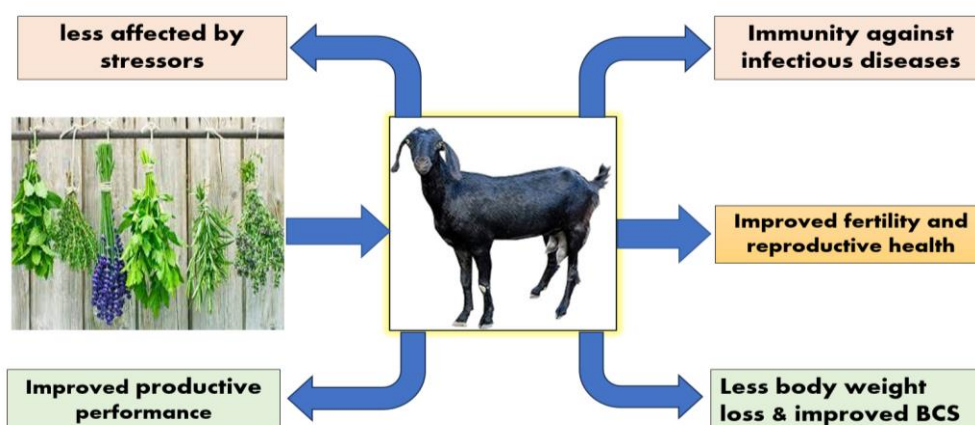
It is estimated that there are 2,50,000 species of higher plants on earth, of which more than 80,000 are medicinal. Recent studies show that medicinal plants (their extracts) help achieve one or more beneficial impacts on ruminant performance. The extracts of leaves, fruits or roots of various plants are traditionally used as medicine. They also have galactagogue property. Recently these plants have been recognized as having antimicrobial and anti-methanogenic properties. An extensive grazing system for goats is being practised chiefly by the resource-poor farmers. Inaccessibility to timely veterinary health care and the cost of treatment are the main constraints, which affect the productivity and sometimes viability of the system. Under these conditions, it becomes essential to utilize the locally available resources as ethno-veterinary medicines to ensure the general well-being and welfare of the animals. WHO recognizes the importance of ancient medicinal practices and recommends their importance in developing livestock in third-world countries. Some herbal plants are reported to have beneficial effects on animal production, reproduction and health. Many herbs and plant extracts have antimicrobial activities against a wide range of bacteria, yeasts, and moulds.

Phytochemical constituents of herbs and their mechanism of action

Primary and secondary metabolites are the two classifications of phytochemical components of plants based on their function in fundamental metabolic processes. All live cells contain primary plant metabolites, which are somewhat similar because they are engaged in fundamental life processes. Secondary plant metabolites, on the other hand, are byproducts of subsidiary pathways.



Tannic acid present in tannins inhibit the growth of gut microbes such as *E. coli*, *Clostridium perfringens*, *Bacteroides fragilis*. Saponin exhibits antimicrobial activity by forming complexes with sterols that are present in the membrane of micro-organisms. Essential oils show antimicrobial activity against bacteria *E. coli* and *Clostridium perfringens*. Flavonoids are polyphenolic phytochemicals having both bactericidal and bacteriostatic properties. So, there may be no specific mode of action for herbal supplementation; instead, herbs have multi- dimensional beneficial effects in ruminant's body.



Shatavari (*Asparagus racemosus*)

Classical Ayurvedic literature claims several therapeutic attributes for the root of *A. racemosus* (Sanskrit: - Shatavari). Specially recommended in cases of threatened abortion and as a galactagogue.

The genus *Asparagus* (with about 300 species) is a rich source of saponins and saponin. It also has growth promoter property. Shatavari supplementation shows promising outcomes in terms of total body weight gain and feed conversion efficiency. It helps in enhancing humoral and cell-mediated immune responses in an efficient manner to increase infection resistance.



Jivanti (*Leptadenia reticulata*)

stimulant properties in the Indian system of medicine. The main constituents reported are stigmasterol, flavonoids, pregnane glycosides and proteins. Aerial parts contain tocopherol & possess activities such as galactagogue, antimicrobial and anti-inflammatory activity. The lactogenic effect has been reported in both small and large ruminants. *L. reticulata* has been shown to increase milk production without affecting milk composition.



Jivanti and a cocktail of herbs namely Galog are known for their lactogenic properties since the times of Charak Samhita. Galog may be attributed to certain metabolic changes in the body tissues and the mammary gland, where the absorbed nutrients are utilized more effectively.

Fenugreek/Methi (*Trigonella foenum-graecum*)

Fenugreek is a leguminous herb that is cultivated in numerous parts of the world predominantly in India, the Middle East, North Africa and South Europe. Fenugreek supports the production of milk because it is a rich source of essential fatty acids. This herb has been shown to significant effect on the lactation performance in ruminants. Supplementation of dairy ration, with fenugreek seeds improves the composition of cow milk.

**Kalajaji /Kalonji/ Black Cumin (*Nigella sativa L.*)**

Kalonji has antipyretic, analgesic, anti-inflammatory, antimicrobial, and antineoplastic activity. Thymoquinone, an active constituent of Kalonji seeds, is a pharmacologically active quinone, which possesses several properties including analgesic and anti-inflammatory actions. Supplementation of *Nigella* seeds linearly improves growth performance, nutrient utilization, and metabolism of ruminants. *Nigella* seeds could also be considered immunomodulators as they can enhance the IgA and IgG of the animals without adversely affecting blood metabolite parameters.



Turmeric (*Curcuma longa*)

This compound is believed to have a wide range of biological effects such as anti-inflammatory, antioxidant, antitumor, antibacterial, and antiviral activities. Turmeric contains properties, which make the digestive process of ruminant animals more efficient. Thereby, producing less waste and thus improves performance in terms of growth.

**Ginger (*Zingiber officinale*)**

Ginger is usually found in grasslands of humid regions as a weedy and herbaceous perennial herb. Ginger roots contains Aryl alkanes that give ginger a pungent taste that enhances the appetite of animal and improve the nutrients palatability which ultimately causes increased feed intake. Ginger may also be attributed to the enhanced synthesis of bile acids in the liver and their excretion in bile,



which beneficially increases the digestion and absorption of lipids. It also helps to increase the absorption of essential nutrients to increase the stability of feed and beneficially influence the gastrointestinal ecosystem through inhibition of pathogenic microorganism growth.

Conclusion

It can be concluded that various herbs such as Shatavari (*Asparagus racemosus*), Jivanti (*Leptadenia reticulata*) and Methi (*Trigonella foenum-graecum*) etc. and their preparations are effective herbal galactagogue and their use as feed additive in goats improves productive performance in general and milk production in particular. Increasing the demand of organic food and cost effectiveness in the livestock feed, the use of herbal feed additives has become the requirement of recent modalities. Utilization of herbal remedies will not only improve the productive efficiency but improve reproductive efficiency, general health and milk production.

