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Proximate composition of some Indian herbs used as feed additive in livestock and poultry

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Abstract

A study was conducted to evaluate the proximate composition of some herbs (*Ocimum sanctum*, *Trigonella foenum-graceum*, *Embllica officinalis* and *Mentha arvensis*). These herbs may be used as feed additive in ration of livestock and poultry. The herbs were collected from reputed herbal shop from Bikaner and proximate composition of the herbs were analyzed by standard methods described by AOAC (2005). The results of study showed the proximate values of the herbs which were in range between 4.50% to 24.15 % for crude protein, 0.50% to 5.50 % for ether extract, 7.10% to 16.00% for crude fiber, 53.00 % to 82.00 % for nitrogen free extract and 4.67-17.67% for total ash. All the herbs are potential source of nutrients along with the medicinal values. The importance of these nutrients cannot be over emphasized, to be used as remedy in human beings. These can be incorporated as a feed additive in livestock and poultry production.

Keywords: Proximate composition, feed additive

1. Introduction

The overall contribution of livestock sector in total GDP is nearly 4.1% during 2012-13 (Anonymous, 2012) [1]. Feeds are the most important part for animal growth. To increase the feed efficiency in terms of more production by less consumption of feed, many efforts has been made by animal researchers. Further, feed additives are important in this regard. For many years, antibiotics have been supplemented to animal to improve growth performance and protect animals from the adverse effects of pathogenic and non-pathogenic enteric microorganisms (Dahiya *et al.*, 2006) [2]. However, the use of therapeutic antibiotics in animal feed is not approved due to chances of development of antibiotic resistant microbes. Therefore, herbs, plant extracts and species can be good alternatives for the health and nutrition of the animals. Herbs could be expected to serve as feed additives due to their suitability and preference, lower cost of production, reduced risk of toxicity, minimum health hazards and environment friendliness (Devegowda, 1996) [3]. They have a wide range of activities such as stimulation of feed intake and endogenous secretions or have antimicrobial, coccidiostatic and anti-helminthic activity.

The use of *Ocimum sanctum* (Tulsi) as an aromatic plant has been well documented in Ayurveda. It belongs to the family Labiateae. Name "Tulsi" in Sanskrit means "the incomparable one". *Ocimum sanctum* (Tulsi) leaves powder/extract is known to possess antioxidant properties. The reduced oxidative stress due to supplementation of this plant to animals is found to enhance the growth rate. The herb tulsi is also known to reduce blood glucose and cholesterol levels. Whole plant is used as a source of remedy (Singh, Amdekar and Verma, 2010) [4]. The seeds of *Trigonella foenum-graecum* (Fenugreek-Methi) are reported to have many therapeutic effects such as hypoglycemic, hypocholesterolaemic, anthelmintic, antibacterial, anti-inflammatory, antipyretic and antimicrobial properties (Bash *et al.*, 2003) [5]. It is rich in protein, fat, total carbohydrates and minerals such as calcium, phosphorus, iron, zinc, magnesium (Gupta *et al.*, 1996) [6], fatty acids predominantly linoleic, linolenic, oleic and palmitic (Schryver, 2002) [7]. It also has neurin, biotin, trimethylamine which tends to stimulate the appetite by their action on the nervous system (Michael and Kumawat, 2003) [8]. *Embllica officinalis* (Amla) has anti-viral, anti-bacterial and anti-fungal properties. The extract is used to treat anemia, asthma, bleeding gums, diabetes, chronic lung disease, hyperlipidaemia, yeast infections, scurvy and cancer. *Mentha arvensis* (Pudina) has several properties like anticarminative, appetizer antiseptic, renal tonic (Kirtikar and Basu, 2005) [9], anti-bacterial and anti-fungal.

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2. Materials and Methods

The samples (*Ocimum sanctum*, *Trigonella foenum-graceum*, *Embllica officinalis* and *Mentha arvensis*) were collected from reputed herbal shop from Bikaner and were analyzed at Department of Animal Nutrition, College of Veterinary and Animal Science, RAJUVAS, Bikaner as per AOAC(2005) [10].

3. Results

The proximate composition of different herbs for crude protein, ether extract, crude fibre, nitrogen free extract and total ash are presented in Table 1. The crude protein content ranges from 4.50% to 24.15 % among all the tested herbs. The highest crude protein was observed in fenugreek seed powder

(24.15%) while lowest was in Amla (4.50%). Likewise, the ether extract content ranges from 0.50% to 5.50 % among all the tested herbs with maximum value in fenugreek seed powder (5.50%) and minimum value in Amla (0.50%). The crude fibre content ranges from 7.10% to 16.00% in the herbs of study and found highest in Tulsi leaf powder (16.00%) and lowest in Fenugreek seed powder (7.10%). Nitrogen free extract content ranges between 53.00 % to 82.00 % with maximum value observed in Amla (82.00%) and minimum value in Mentha (53.00%). The total ash was highest in Pudina (14.30%) and minimum in Amla (3.50%) with a range from 3.50% to 14.30%.

Table 1: Proximate composition of Herbs (% Dry matter basis)

Botanical name (Local name/ common name)	DM	CP	EE	CF	NFE	Total Ash
<i>Ocimum sanctum</i> (Tulsi)	92.25	05.10	04.50	16.00	60.90	13.50
<i>Trigonella foenum-graecum</i> (Fenugreek-Methi)	93.65	24.15	05.50	07.10	59.15	04.10
<i>Embllica officinalis</i> (Amla)	92.50	04.50	0.50	09.50	82.00	03.50
<i>Mentha arvensis</i> (Pudina)	94.00	20.50	01.70	10.50	53.00	14.30

4. Conclusion

All the herbs are potential source of nutrients along with the medicinal values. The importance of these nutrients cannot be over emphasized, to be used as remedy in human beings. These can be incorporated as a feed additive in livestock and poultry production.

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