

Nutritional study of some medicinal plants as a possible source of feed material

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ABSTRACT

Objective: The objective is to study the evaluation of nutritive value of *Berberis lycium*, *Citrullus colocynthis*, and *Plumbago zeylanica*. **Materials and Methods:** The nutritional composition of the plants was determined using ultraviolet visible spectroscopy and chemical assay methods. Two lots of each plant in duplicate were evaluated for the parameters protein, fiber, fat, carbohydrate, calcium, and phosphorus. **Results:** *B. lycium* was found to contain protein content 8.8–10.0%, fiber 36.65–40.05%, carbohydrate 18.36–20.62%, calcium 0.37–0.44%, total ash 4.5–5.2%, and phosphorus 0.54–0.94, whereas *C. colocynthis* has the protein content 13.72–14.65%, fiber 33–38%, carbohydrate 11.04–13.9%, total ash 17–19%, calcium 0.5–0.73%, and phosphorus 0.97–1.31. *P. zeylanica* was found to contain protein content 4.99–5.3%, fiber 33–38%, carbohydrate 10.96–13.46%, total ash 8.41–8.85%, calcium 1.3–1.48%, and phosphorus 0.21%. **Conclusion:** These medicinal plants show high nutritive value and could be a potential source of feed material for animal health care.

Keywords: *Berberis lycium*, *Citrullus colocynthis*, fiber, *Plumbago zeylanica*, protein

Introduction

The effectiveness of plants is mainly because of primary and secondary plant metabolites present in the plants. The medicinal plants from decades used for the treatment of various diseases in animals and human beings. Nowadays, utilization of these medicinal plants is increasing. At present, plants are used as one of the prominent sources of nutritional supplement for animal feed. The alarming condition of excessive demand of grains globally requires an alternate solution as a feed material for animal health care. In addition, diminution of soil quality, water scarcity, and weather fluctuations continue to affect production capacity of crops and forage plants, impacting adversely the animal productivity. There are a number of plants still to be explored for their nutritive value and carrying the potential of replacing grains and other materials.

Therefore, it is essential for animal nutrition scientists to introduce and promote alternative feed resources that carry potential nutritive value and are adapted to harsh environmental conditions. There are numerous under-utilized plants which can withstand harsh conditions and are available today which have tremendous potential as livestock feed. The ignorance of potentially excellent animal feed resources

also results in loss of plant biodiversity. The cultivation and judicious use of such plants as feed resources is expected to enhance plant biodiversity.^[1]

Ethnoveterinary usage and phytochemical composition of three medicinal plants, i.e., *Berberis lycium*, *Plumbago zeylanica*, and *Citrullus colocynthis* persuaded us to evaluate their nutritional constituent which can possibly be used as feed material for the better livestock health care [Figure 1].

B. lycium also known as Indian barberry belongs to family Berberidaceae. It is an evergreen deciduous shrub. It occurs in subtropical and temperate regions from Kashmir to Uttaranchal on the outer northern-western Himalayas.^[2] The preliminary phytochemical investigation confirmed the presence of alkaloids, terpenoids, tannins, flavonoids, fat, and other constituents from the herb. Fruit and leaves are the good sources of protein, calcium, fat, fiber, sulfur, and Vitamin C. Every part of the plant is used in many classical ayurvedic formulations. In the Unani system of medicine, plant is used in the treatment of leprosy. The plant is extensively used in the treatment of jaundice, piles, and menorrhagia.^[3] It is also used in diarrhea, intestinal colic, and dysentery.^[4] The plant is also reported to possess antibacterial and antifungal activity [Figure 2].^[5]

P. zeylanica root is used in multiple disorders such as laxative, expectorant, tonic, abortifacient, and good appetizer. It is also beneficial in rheumatism, laryngitis, scabies, and disease of spleen.^[6]

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