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Treatment of impaction of digestive system in ruminants by Tumba

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Abstract

The research was conducted in Nal area of Bikaner district of Rajasthan State of India. The animals reared here are buffaloes and cross-bred cattle. The animals are mainly fed on dry roughages with limited access to green grasses. A total of 15 (10 buffaloes and 5 cows) animals which were suffering from impaction were taken into study. The animals were having severe abdominal pain and were also consuming less amount of water. On palpation of the para-lumbar fossa, there was low or absence of rumino-reticular movements. There was drop in fecal excretion in some animals while few had tight fecal material. All the animals were also examined per-rectally which revealed tightness of the rumen. The rectum had few pellet like fecal material which was very dry. Powdered form of the fruit and root of the *C. colocynthis* was administered to the animals orally @25 gm/100 kg BW for five days. After 3-4 days of consuming the powder the animals were relieved of the impaction.

Keywords: Buffaloes, *Citrullus Colocynthis*, cows, impaction

Introduction

The Cucurbitaceae family is one of the most genetically diverse groups of food plants [24]. Plants of this family are generally drought-tolerant, intolerant to wet and poorly drained soils and frost-sensitive. Some well-known members of this family are bitter apple, gourd, cucumber, melon and pumpkin [18].

Due to consumer awareness on the health benefits of cucurbit plants and fruits, their production seems to have increased over the time. Over the last two decades, India and China have been the largest cucurbit producers followed by Russia, United States of America, Egypt and Republic of Iran [24]. *Citrullus Colocynthis* as documented in the *CRC World Dictionary of Plant Names A-C* belongs to the Cucurbitaceae family, a large plant family which consists of nearly 120 genera and 825 species [16]. This plant family is known for its great genetic diversity and widespread adaptation which includes tropical and subtropical regions, arid deserts and temperate locations. *Citrullus colocynthis* is a perennial herbaceous creeping plant, with angular and rough stems. Cucurbits are known for their high protein and oil content. It has many common names including colocynth, bitter apple, bitter cucumber, desert gourd, egusi, vine of Sodom, or wild gourd. The fruit of *Citrullus colocynthis* is commonly called Colocynth/ Bitter Apple in English, Hanjal in Urdu, Indrayan in Hindi, Kattu Kattuvellari in Malayalam, Anedri in Sanskrit, Rakhali in Bengali, and Pcitummatti in Tamil [1]. In India and Pakistan, it is known as Tumba [7, 14]. The species is characterized by its angular and rough stems, rough, deeply 3–7 lobed leaves of 5-10 cm, and solitary pale yellow flowers. Each plant can produce about 15-30 round (7-10 cm) fruits, green with yellow stripes, with small, smooth, brownish seeds [18]. *C. colocynthis* is a desert plant with a rich history as an important medicinal plant and as a source of valuable oil. Its small seeds appear in several early Egyptian, Libyan and Near Eastern sites from about 4000 BC [25]. During biblical times, fruits of the colocynth or bitter apple or bitter gourd were gathered as deadly poison. Fruits were widely used medicinally, especially for stomach pains. The pulp is an effective hydragogue, cathartic and laxative because of its content of glucosides such as colocynthin. On the island of Cyprus, the raising of colocynth has been a source of revenue since the 14th century. The seeds are edible and when ground provides rough bread for the desert Bedouins. *C. colocynthis* is a drought tolerant species, which can survive arid environments by maintaining its water content without any wilting of the leaves or desiccation even under severe stress conditions. This is accomplished by extending its root system into deep ground water. *C. colocynthis* primarily accumulates citrulline under drought conditions. Citrulline functions as an efficient radical scavenger, and thus contributes to oxidative stress-tolerance [23].

Traditional Uses

Citrullus colocynthis is used widely in different parts of the world for the treatment of a number of diseases including diabetes, constipation, leprosy, asthma, bronchitis, jaundice, joint pain, cancer and mastitis [2]. The medicinal uses of this plant have been reported in the indigenous system of medicines in Pakistan, India, China, Africa and Asia, which include its uses in gut disorders such as indigestion, dysentery, gastroenteritis and colic pain as well as common cold, cough, toothache, wounds, and diabetes [6]. The fruit can stimulate intestinal peristalsis and soften bowel contents by an irritant action on the enteric mucosa [3]. *Citrullus colocynthis* fruits are usually recognized for its wide range of medicinal uses as well as pharmaceutical and nutraceutical potential. The fruits are bitter, pungent, cooling, purgative, anthelmintic, antipyretic, carminative, cures tumors, ascites, leucoderma, ulcers, asthma, bronchitis, urinary discharges, jaundice, enlargement of spleen, tuberculosis glands of the neck, dyspepsia, constipation, anemia, throat diseases, elephantiasis, joints pain. The plant *Citrullus colocynthis* claims to possess hypoglycemic property [4].

Materials and Methods

The research was conducted in Nal area of Bikaner district of Rajasthan State of India. The animals reared here are buffaloes and cross-bred cattle. The animals are mainly fed on dry roughages with limited access to green grasses. A total of 15 (10 buffaloes and 5 cows) animals which were suffering from impaction were taken into study. The animals were having severe abdominal pain and were also consuming less amount of water. On palpation of the para-lumbar fossa, there was low or absence of rumino-reticular movements. There was drop in fecal excretion in some animals while few had tight fecal material. All the animals were also examined per-rectally which revealed tightness of the rumen. The rectum had few pellet like fecal material which was very dry. Powdered form of the fruit and root of the *C. colocynthis* was administered to the animals orally @25 gm/100 kg BW for five days.

Results and Discussion

After 3-4 days of consuming the powder the animals were relieved of the impaction. The powder had a purgative effect on the animals as also reported in humans [2, 9, 17]. The plant is known to be beneficial in multiple gut disorders such as, indigestion, gastroenteritis, constipation and colic pain, while there is no study available on any gut disorders. It was observed that the plants with multiple indications of gut disorders usually contain combination of gut stimulants (mainly acetylcholine like) and spasmolytic (mainly Ca⁺⁺ antagonist like) constituents, which not only explain their medicinal use in constipation and colic pain/ diarrhea, but also offers side-effects neutralizing potential, thus not allowing gut stimulant component to go beyond certain limit, above which it could have been harmful [5].

The ethno-veterinary (EV) investigations on many plants including *C. colocynthis* in Rajasthan were performed by different researchers. A brief account is given here-in-below. Sebastian [15] considered plants utilized as veterinary medication as galactagogue and grain in the forest of Rajasthan. Singh and Pandey [20] published a book on ethno-botany of Rajasthan and referenced a couple EV plants utilized by the innate community of Rajasthan. Kumar [13] examined on identification and documentation of EV plants

utilized by sheep ranchers in Rajasthan. Katewa and Choudhary [10] made an EV study of plants in Rajsamand district. Takhar [21] added to people herbal veterinary drugs of southern Rajasthan. Jain [8] reported some phyto-therapeutic claims by tribes of southern Rajasthan and reported 20 restorative plants having a place with 15 families. Katewa and Galav [11] detailed conventional herbal medications from the Shekhawati area of Rajasthan for different infirmities, for example, skin sexual, stomach related and respiratory-related issues. The account of toxic plants from Arawali region could be found in the work of Katewa [12]. Shekhawat and Batra [19] revealed family unit cures utilized against creature and creepy crawly nibble in Bundi dist., Rajasthan. Yadav [22] described EVP are shelter for improving indigenous cow's efficiency in Gaushalas.

Conclusion

In this work, we have worked on the therapeutic use of *Citrullus colocynthis* on the animals suffering from impaction of livestock holders of Nal area of Bikaner District of Rajasthan, India. The results revealed that the powder form of the root and fruit of the *Citrullus colocynthis* @25 gm/100 kg BW given orally for five days gave good results with regard to impaction of the animals and relieved them from this problem. Likewise there are many plants growing in the wild with diverse pharmacological action on many diseases. In human medicine, we are fore-most and have gained access to these plants and their value to cure many diseases. In veterinary medicine, we are still lacking in many areas of treatment. So the need of the hour is to cure the diseases of the animals by ethno-veterinary practice as, we have used the English drugs for centuries, with which an era has come of anti-microbial resistance.

References

1. Amamou F, Bouafia M, Chabane-Sari D, Meziane RK, Nani A. *Citrullus colocynthis*: a desert plant native in Algeria, effects of fixed oil on blood homeostasis in Wistar rat. Journal of Natural Product and Plant Resources 2011;1:1-7.
2. Asyaz S, Khan FU, Hussain I, Khan MA, Khan IU. Evaluation of chemical analysis profile of *Citrullus colocynthis* growing in Southern area of Khyber Pukhtunkhwa, Pakistan. World Applied Sciences Journal 2010;10:402-405.
3. Barth A, Muller D, Dorrling K. *In vitro* investigation of a standardized dried extract of *Citrullus colocynthis* on liver toxicity in adult rats. Experimental and Toxicologic Pathology 2002;54:223-230.
4. Al-Ghaithi F, El-Ridi MR, Adeghate E, Amiri MH. Biochemical effects of *Citrullus colocynthis* in normal and diabetic rat. Molecular and Cellular Biochemistry 2004;261(1):143-149.
5. Gilani AH, Atta-ur-Rahman. Trends in ethno pharmacology. Journal of Ethno pharmacology 2005;100:43-49.
6. Gurudeeban S, Ramanathan T, Satyavani K. Characterization of volatile compounds from bitter apple (*Citrullus colocynthis*) using GC-MS. International Journal of Chemistry and Analytical Sciences 2011;2:108-110.
7. Hussain AI, Rathore HA, Sattar MZ, Chatha SA, Sarker SD, Gilani AH. *Citrullus colocynthis* (L.) Schrad (bitter apple fruit): A review of its phytochemistry,

- pharmacology, traditional uses and nutritional potential. *Journal of Ethno pharmacology* 2014;155:54-66.
8. Jain A, Katewa SS, Galav P, Sharma P. Medicinal plant diversity of Sitamata wild life sanctuary, Rajasthan, India. *Journal of Ethno pharmacology* 2005;102:143-157.
 9. Jayaraman R, Christina AJM. Evaluation of *Citrullus colocynthis* fruits on *in vitro* antioxidant activity and *in vivo* DEN/PB induced hepatotoxicity. *International Journal of Applied Research in Natural Products* 2013;6(1):1-9.
 10. Katewa SS, Chaudhary BL. Ethno veterinary survey of plants of Rajsamand district of Rajasthan. *Vasundhara* 2000;5:95-99.
 11. Katewa SS, Galav P. Traditional herbal medicines from shekhawati region of Rajasthan. *Indian Journal of Traditional Knowledge* 2005;4(3):237-245.
 12. Katewa SS, Jain A, Chaudhary BL, Galav P. Some Unreported Medicinal Uses of Plants from the Tribal Area of Southern Rajasthan. *Bulletin of the Botanical Survey of India* 2006;47:1-4.
 13. Kumar D. Ethno-veterinary practices in sheep. Central Sheep and Wool Research Institute, Avikanagar, Rajasthan, India 2000.
 14. Mahajan SS, Kumawat RN. Study of seed dormancy in colocynth (*Citrullus colocynthis* L.) With after-ripening of fruits, seed extraction procedures and period of seed storage. *National Academy Science Letters* 2013;36(4):373-378.
 15. Sebastian MK. Plants used as veterinary medicines, galactagogues and fodder in the forest area of Rajasthan. *Journal of Economic and Taxonomic Botany* 1984;5:785-788.
 16. Milind P, Kulwant S. Musk melon is eat-must melon. *International Research Journal of Pharmacy* 2011;2(8):52-57.
 17. Mitaliya KD, Bhatt DC. Rare and endangered medicinal plants of Gujarat. *Journal of Economic and Taxonomic Botany* 2003;4:845-850.
 18. Robinson RW, Decker-Walters DS. Crop production science in horticulture. Cucurbit, 6, CAB International. Wallingford, Oxon, U.K., New York, N.Y 1997.
 19. Shekhawat D, Batra A. Ethnobotany some household remedies used against animals and insect bite in Bundi Dist. (Rajasthan). *Ethno botany* 2006;18:131-134.
 20. Singh V, Pandey RP. Medicinal plant lore of the tribals of East Rajasthan. *Journal of Economic and Taxonomic Botany* 1980;1:137-147.
 21. Thakhar HK. Folk Herbal veterinary medicines of southern Rajasthan. *Indian Journal of Traditional Knowledge* 2004;3(4):407-418.
 22. Yadav DK. Ethno-veterinary practices: A boon for improving indigenous cattle productivity in Gaushalas. *Livestock Research for Rural Development*, 2007, 19(6).
 23. Yokota A, Kawasaki S, Iwano M, Nakamura C, Miyake C, Akashi K. Citrulline and DRIP-protein (ArgE homologue) in drought tolerance of wild watermelon. *Annals of Botany* 2002;89:825-832.
 24. Zaini NAM, Anwar F, Hamid AA, Saari N. Kundur [*Benincasa hispida* (Thunb.) Cogn.]: a potential source for valuable nutrients and functional foods. *Food Research International* 2011;44:2368-2376.
 25. Zohary D, Hopf M. Domestication of plants in the old world, Edn 3, Oxford university press, Oxford, UK 2000.