Ethno-veterinary practices of goat farmers in different districts of Vindhyan Zone of Uttar Pradesh

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Abstract
Ethno-Veterinary Medicine (EVM) is the use of medicinal plants, surgical techniques and traditional management practices to prevent and treat spectrum of livestock diseases. Ethnoveterinary practices used by goat farmers in different districts of Vindhyan zone were studied for rhinitis, bronchitis (coughing), pyrexia of unknown origin, enteritis, skin disorders, mouth ulcer and udder abnormality, and information collected from 120 respondents. In case of Rhinitis commonly used ingredients were neem oil, mustard oil, ajwain (Trachyspermum ammi), ginger (Zingiber officinale), jaggery, garlic (Allium sativum) and asafoetida. For treatment of Bronchitis, mostly respondents used neem oil and ajwain. Neem oil, mustard oil, ajwain, Salt, ginger and garlic were used to treat pyrexia, Heeng, Sesam leaves and neem oil were used for treatment of enteritis. Local application of neem oil and neem leaf paste was the most common practice for treatment of skin disorders. For treatment of mouth ulcer, maximum respondents used neem oil and 40% respondents used neem leaf. Alum, salt, neem oil and amla were used to treat udder abnormality in different districts of Vindhyan Zone.

Keywords: Ethnoveterinary practices, goats, Vindhyan Zone, Uttar Pradesh

Introduction
Traditional veterinary medicine is very important in developing countries where conventional remedies for animal health care are inaccessible or unaffordable to poor rural farmers (Nguyen et al., 2005; McGaw et al., 2007) (9, 10). About 80% of people in the world today rely on folk (or traditional) medicine for treating both human and animal diseases (Iqbal et al., 2003; Muhammad et al., 2005) (11, 12). According to the United Nations Food and Agricultural Organization (FAO), the lack of drugs to treat diseases and infections results in losses of 30–35% in the breeding sector of many developing countries, where poor animal health remains the major constraint to increased production (FAO, 2002) [8]. The use of animals for medicinal purposes is part of a body of traditional knowledge that is increasingly becoming more relevant to discussions on conservation biology, public health policies, sustainable management of natural resources, biological prospection and patents (Alves and Rosa, 2005; Alves et al. 2010a, b, c and Souto et al., 2009) [3, 6, 5, 4, 22].

Small scale farmers reported that use of commercial drugs is effective in reducing parasites that cause diseases (Iqbal et al., 2005; Mathias, 2007; Mwale and Masika, 2009) [12, 13]. However, their use causes harm if not used properly (McGaw et al., 2007) [10]. Since they are expensive (Maphosa and Masika, 2010) [14], rural farmers prefer ethno-veterinary medicine’ on the other hand, other small scale farmers have been found to combine remedies (Githiori et al., 2003; Nalule et al., 2011; Tyasi and Nkohla, 2015) [9, 18, 25]. Farmers mostly use medicinal plants, which is a component of EVM, in controlling diseases (McGaw et al., 2000). Conventional medicine is a remedy or drug used for diagnosis, treatment of disease and for maintenance of an animal (Tyasi et al., 2015) [25]. Many diverse conventional products are available to control or treat livestock diseases (Papadopoulos et al., 2007) [20];

Materials and Methods
Ethnoveterinary practices used by goat farmers in different districts of Vindhyan zone were studied for rhinitis, bronchitis (coughing), pyrexia of unknown origin, enteritis, skin disorders, mouth ulcer and udder abnormality. Based on the nature of research problem, Ex-post facto research design was followed in the present study. The Vindhyan zone of Uttar Pradesh comprises the districts of Sant Ravidas Nagar, Mirzapur and Sonbhadra. From each selected district, two blocks were selected on the basis of highest goat population. From each block
two villages were selected. Further, from each village twenty respondents having five or more goats were selected to make a total sample size of 120 respondents (40 from each district). Each selected respondent was personally interviewed by the researcher, using the developed structured interview schedule during the survey period. GPS enabled android App Epicollect 5 was used to collect data. Data from secondary sources and through observations were also collected.

**Results**

Ethnoveterinary practices used by goat farmers in different districts were studied for commonly encountered problems. The information regarding ethno veterinary practices used to treat these ailments was collected from 120 respondents. Based on the clinical observations described by the farmers the information was collected for following diseases district wise.

**Rhinitis:** The commonly used ingredients were neem oil, mustard oil, ajwain (*Trachyspermum ammi*), ginger (*Zingiber officinale*), jaggery, garlic (*Allium sativum*), and asafoetida. Neem oil was used by all the respondents. Percent respondents using neem oil however varied between these districts (table 1). In Abholi block of Santravidas Nagar district, 60% respondents used Neem oil, mustard oil, ajwain and ginger were 30, 30, 20 and 20 respectively. The percent respondents in Manakpur block of Santravidas Nagar district using Neem oil, ajwain, mustard oil and garlic was 30, 30, 20 and 20. In Sermadh block 30% respondents used Neem oil and mustard oil respectively and 20% respondents used ajwain and ginger respectively for treatment of rhinitis. In Imbrahimpur block of Santravidas Nagar district, 60% respondents used mustard oil followed by use of Neem oil (20%) and ginger (20%) respectively. The proportion of farmers using Neem oil, ginger, jaggery, mustard oil and ajwain in Jhilwarbizar block of Mirzapur district was 30, 30, 20, 10 and 10%. In Durgaraha block of Mirzapur district Neem oil, Jaggery and Ginger was used by each by 30% respondents and 10% respondents used mustard oil for treatment of rhinitis. In Husenipur block of Mirzapur district, mustard oil, ajwain, Jaggery and Ginger were used each by 10% respondents respectively and 60% respondents used Neem oil for treatment of rhinitis. Most of the respondents (40%) used ginger followed by mustard oil (30%), Neem oil (10%), ajwain (10%) and garlic (10%) Mahangipur block of Mirzapur district, 10% respondents used respectively, 30%. In Lodhi block of Sonebhadra district, 30% respondents used Neem oil and ajwain each respectively and 20% respondents used mustard oil and garlic each respectively for treatment of Rhinitis. In Sukrit block of Sonebhadra district, 50% respondents used Neem oil, followed by use of heeng (40%) and garlic (10%) respondents. In Patwad block of Sonebhadra district, 20% respondents each used Neem oil, Ginger and Garlic respectively and 30% respondents used mustard oil and 10% respondents used Ajwain for treatment of Rhinitis. In Kanchh block of Sonebhadra district, 80% respondents used Neem oil and 20% respondents used Jaggery. In Sukrit block of Sonebhadra district, 90% respondents used Neem oil and 10% respondents used garlic for treatment of PUO. In Patwad block of Sonebhadra district, 20% respondents used mustard oil, Ginger and Garlic respectively and 30% respondents used Neem oil and 10% respondents used Ajwain for treatment of PUO. Mustard oil, Neem oil, Ajwain, Garlic and Jaggery were commonly employed by goat farmers in Kanchh block of Sonebhadra district.

**Pyrexia of unknown origin:** Goat farmers from different districts used neem oil, mustard oil, ajwain. Salt, ginger and garlic to treat pyrexia. The percent respondents however varied. In Abholi block and Manakpur block of Santravidas Nagar district, 100% respondents used Mustard oil. In Sermadh block of Santravidas Nagar district, 50% respondents used Neem oil, 30% respondents used mustard oil and 20% respondents used Salt for treatment of PUO. In Imbrahimpur block of Santravidas Nagar district Neem oil and mustard oil, ajwain, Jaggery and salt were used. 50% respondents used Neem oil in Jhilwarbizar block of Mirzapur district. Majority of respondents (50%) used Neem oil in Durgaraha block of Mirzapur district. Ginger was most commonly used by 70% goat farmers in Husenipur block of Mirzapur district. In Mahangipur block of Mirzapur district, 80% respondents used mustard oil and 20% respondents used Salt for treatment of PUO. In Lodhi block of Sonebhadra district, 80% respondents used Neem oil and 20% respondents used Jaggery. In Sukrit block of Sonebhadra district, 90% respondents used Neem oil and 10% respondents used garlic for treatment of PUO. In Patwad block of Sonebhadra district, 20% respondents used mustard oil, Ginger and Garlic respectively and 30% respondents used Neem oil and 10% respondents used Ajwain for treatment of PUO. Mustard oil, Neem oil, Ajwain, Garlic and Jaggery were commonly employed by goat farmers in Kanchh block of Sonebhadra district.

**Enteritis:** Enteritis characterised by loose faeces was a common problem of goat farmers. For treatment of enteritis in Abholi block of Santravidas Nagar district, 80% respondents used Heeng and 10% respondents used Sesam leaves and Neem Oil for treatment of Enteritis. Sesam leaves was commonly used by farmers of Sermadh (60%), Imbrahimpur
(70%) and patwadh (60%). Ghee was used by farmers in in Semradh and Imbrahir Pur. Similarly, Neem oil was used only in Abholi and Semradh (10% respondents in each). Rahk was administered orally by respondents in Jhilwarbazar and Patwadh. The percent respondents using salt in different blocks were 50% (Jhilwarbazar), 30% (Dugarah) and 20% (Mahangipur). Jackfruit, Barkan, Guava and garlic were also used.

Skin Disorders: For treatment of Skin Disorders, local application of neem oil and neem leaf paste was the most common practice adopted in all districts of Vindhyan Zone. 100% respondents used Neem oil for treatment of Skin Disorders in Imbrahirpur block of Santravidas Nagar district, in Husenipur block and Mahangipur block of Mirzapur district and in Lodhi block of Sonebhadra district. In Abholi block of Santravidas Nagar district, Sukrit block of Sonebhadra district and Jhilwarbazar block of Mirzapur district, 90% respondents used Neem oil and 10% respondents used Neem Leaf. Percent respondents using neem leaf and neem leaf were 70% and 30% respectively in Manakpur block of Santravidas Nagar district. In Durgaraha block of Mirzapur district, 80% respondents used Neem oil and 20% respondents used Neem Leaf for treatment of Skin Disorders. In Patwadh block of Sonebhadra district, 60% respondents used Neem oil and 40% respondents used Neem Leaf for treatment of Skin Disorders. Neem oil and Neem Leaf was used by 40% respondents and 60% respondents in Kanchh block of Sonebhadra district.

Mouth Ulcer: For treatment of Mouth Ulcer in Abholi block of Santravidas Nagar district 60% respondents used Neem oil and 40% respondents used Neem Leaf. In Manakpur block of Santravidas Nagar district and in Patwadh block of Sonebhadra district, 60% respondents used Neem oil and 40% respondents used Neem Leaf for treatment of Mouth Ulcer. Neem oil was applied locally by 100% respondents in Sermadh block, Imbrahirpur block of Santravidas Nagar, Jhilwarbazar, Durgaraha, Husenipur and Mahangipur of Mirzapur district and in Lodhi and Sukrit block of Sonebhadra district. In Kanchh block of Sonebhadra district, 70% respondents used Neem oil and 30% respondents used Neem Leaf for treatment of mouth ulcer.

Udder Abnormality: Alum, Salt, Neem oil and Amla were used to treat udder abnormality in different districts of Vindhyan Zone. Majority of respondents used alum followed by salt, amla and neem oil.

Discussion
Adedeji et al. 2014 [1] studied ethno veterinary practices in goat production in Boripe local government area of Osun state and reported that 94% of the respondents treat their animal with local concoction, 2% treat with the help of veterinary doctor and 4% were engaged in using both. About 40% of the animals having pneumonia treated with local herb survived, 14% having diarrhoea survived, 16% having mastitis survived and 30% having mange survived. 60% of the respondents used bitter leaf, 20% used sand paper leaf, 6% used cassava soaked, 6% used sulphur cake, 4% engine oil and 4% palm oil. Medicinal herbs contain essential oil which modify rumen microbial fermentation and may allow treatment of rumen fermentation to enhance animal performance and feed utilization. Abdelhamid et al., (2011) also recorded slight increase in body weight gain by adding medicinal herbs at 90 days of post kidding (weaning) in Zarabi goats. The positive effect of feeding local herbs on blood biochemical indices has also been studied, Tawfik et al., (2005) [23]. A significant decrease in blood cholesterol and triglyceride was reported by feeding aniseed (Ifikhar et al., 2017) [10].

Azadirachta indica, commonly known as neem, a major component in siddha medicine and Ayurvedic and Unani medicine and is particularly prescribed for skin diseases. In Indian system of medicine, Trachyspermum ammi or ajwain is administered for curing stomach disorders, a paste of crushed fruits is applied externally for relieving colic pains; and a hot and dry fomentation of the fruits is applied on chest for asthma Singh et al. (2003) [21]. T. ammi has been shown to possess antimicrobial, hypolipidemic, digestive stimulant, Vasudevan et al. (2000) [26] anti-hypertensive, hepatoprotective, antispasmodic, broncho-dilating, antihistiasis, diuretic, abortifacient, galactagogic antiplatelet-aggregatory, antiinflammatory, Thangam and Dhananjayan (2003) [24] antitussive, antifilarial, gastroprotective, nematocidal, analgetic, detoxification of aflatoxins, and ameliorative effects. Therapeutic uses of T. ammi fruits include; stomachic, carminative and expectorant, antiseptic and amoebiasis, antimicrobial.

Ginger is a tonic and stimulant. It is known to help reduce fever and cleanse the body of toxins. It also has blood thinning properties, inhibits cell-clotting enzymes in your blood stream, lowers cholesterol, and reduces migraine headaches. Garlic (Allium sativum) has been reported to possess antimicrobial, hypolipidemic, digestive stimulant, and is particularly prescribed for stomach disorders, a paste of crushed fruits is applied externally for relieving colic pains; and a hot and dry fomentation of the fruits is applied on chest for asthma Singh et al. (2003) [21]. T. ammi has been shown to possess antimicrobial, hypolipidemic, digestive stimulant, and is particularly prescribed for stomach disorders, a paste of crushed fruits is applied externally for relieving colic pains; and a hot and dry fomentation of the fruits is applied on chest for asthma Singh et al. (2003) [21].

Table 1: Ethno-veterinary practices of goat farmers in different districts of Vindhyan zone

| Attribute                  | Santravidas Nagar | Mirzapur | Sonebhadra |
|----------------------------|-------------------|----------|------------|
|                            | Abholi            | Makanpur | Semradh    | Imbrahirpur | Dugarah | Husenipur | Mahangipur | Lodhi | Sukrit | Patwadh | Kanchh |
| Rhinitis                   |                   |          |            |             |         |           |            |       |        |         |        |
| Neem oil                   | 30                | 30       | 30         | 20           | 10      | 30         | 60         | 10    | 30      | 20      | 20     |
| Mustard oil                | 30                | 20       | 30         | 60           | 30      | 10         | 10         | 30    | 20      | 30      | 40     |
| Ajwain                     | 20                | 30       | 20         | 20           | 0       | 30         | 10         | 10    | 30      | 10      | 10     |
| Ginger                     | 20                | 0        | 20         | 20           | 10      | 30         | 10         | 40    | 0       | 20      | 0      |
| Jaggery                    | 0                 | 0        | 0          | 0            | 0       | 0          | 0          | 10    | 20      | 10      | 20     |
| Garlic                     | 0                 | 20       | 0          | 0            | 0       | 0          | 0          | 10    | 20      | 10      | 20     |
| Asafoetida heeng           | 0                 | 0        | 0          | 0            | 0       | 0          | 0          | 10    | 40      | 0       | 0      |
| Coughing (bronchitis)      |                   |          |            |              |         |            |            |       |         |         |        |
| Neem oil                   | 90                | 60       | 50         | 20           | 30      | 60         | 10         | 20    | 30      | 50      | 30     |
| Mustard oil                | 0                 | 30       | 30         | 50           | 0       | 0          | 0          | 0     | 0       | 20      | 40     |
| Ajwain                     | 10                | 20       | 20         | 10           | 30      | 0          | 0          | 0     | 60      | 10      | 10     |
| Salt                       | 0                 | 0        | 0          | 0            | 10      | 20         | 10         | 20    | 0       | 20      | 0      |
| Ginger                     | 0                 | 0        | 0          | 20           | 20      | 10         | 70         | 60    | 0       | 0       | 0      |
| Jaggery                    | 0                 | 10       | 0          | 10           | 10      | 10         | 10         | 0     | 0       | 0       | 10     |
| Garlic                     | 0                 | 10       | 0          | 0            | 0       | 0          | 0          | 10    | 50      | 20      | 20     |
Conclusion
In India, at least 2500 plants, out of 18,000 recorded in the country are utilized for medicinal purposes. 65% of the population in rural areas in India use the Ayurveda medicine system and medicinal plants to help meet their primary health care needs. In treatment of rhinitis (neem oil, mustard oil, ajwain, ginger, jaggery, asafoetida), bronchitis (neem oil and ajwain), pyrexia (neem oil, mustard oil, ajwain, salt, ginger, garlic), enteritis (heeng, sesam leaves and neem oil), skin disorder (neem oil), mouth ulcer (neem oil, neem leaf) and udder abnormality (alum, Salt, neem oil and amla), Ethnoveterinary practices is very well documented, cost effective and utilised for treatment of goat diseases.

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