

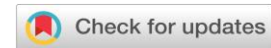
Exploring the Role of Traditional Plant Remedies in Treating Respiratory Diseases in Livestock: A Study in Delhi NCR

Dr. Vaibhav Sharma*

Department of Botany
Shaheed Mangal Pandey Govt. Girls P.G. College,
Meerut

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* Corresponding author

Abstract: This study investigates the role of traditional plant remedies in treating respiratory diseases in livestock in Delhi NCR. A sample of 409 households was surveyed using a structured questionnaire to assess the frequency of remedy use and its effect on reducing respiratory symptoms. Data analysis was conducted using descriptive statistics, Pearson correlation, and multiple regression analysis. The results indicate a significant positive relationship between traditional remedy usage and the improvement of respiratory health in livestock. The study highlights the potential benefits of traditional practices for livestock health management in rural and peri-urban areas. It contributes valuable insights for policymakers and veterinarians aiming to integrate traditional knowledge with modern veterinary practices to enhance animal welfare.

Keywords: Traditional plant remedies; Respiratory diseases; Livestock health; Delhi NCR; Veterinary practices.

1. Introduction

Traditional plant remedies have been used for centuries in the treatment of various diseases in both humans and animals (Ahmed & Urooj, 2010). In rural and peri-urban areas, these remedies are often more accessible and affordable compared to modern veterinary medicine, particularly for livestock care (Bandyopadhyay & Dey, 2022). Respiratory diseases in livestock, such as pneumonia and bronchitis, are common and can significantly affect animal productivity and welfare (Ayrle et al., 2016). Farmers and livestock owners in regions like Delhi NCR frequently rely on locally available plants for treating such ailments due to their ease of use, low cost, and cultural significance (Ayrle et al., 2016). These remedies, passed down through generations, offer an important alternative for managing animal health in resource-constrained settings (Selvam & Durai, 2018).

Despite the widespread use of traditional remedies, scientific research on their efficacy in treating livestock diseases is limited, particularly in urbanized and peri-urban areas like Delhi NCR. While some studies have explored the medicinal properties of specific plants, there is a need for empirical data to support the effectiveness of these practices in treating respiratory diseases in livestock (Garcia, 2020). Understanding the impact of traditional remedies on animal health could provide valuable insights for integrating indigenous knowledge with modern veterinary practices, enhancing overall livestock welfare (Maibam et al., 2022). This study aims to bridge this gap by evaluating the use of traditional plant remedies in livestock care and assessing their effectiveness in treating respiratory diseases.

2. Literature Review



Use of Traditional Plant Remedies in Livestock Health

Traditional plant-based remedies have been widely used across various cultures for treating livestock ailments, particularly in rural settings. Several studies have documented the medicinal properties of plants like *Tulsi* (*Ocimum sanctum*), *Neem* (*Azadirachta indica*), and *Ginger* (*Zingiber officinale*), which have been shown to possess antimicrobial and anti-inflammatory properties beneficial for treating respiratory conditions in livestock (Rehman et al., 2022). These remedies are typically utilized in situations where modern veterinary services are either unavailable or unaffordable (Vidyasagar & Siddalinga Murthy, 2013). Ethnoveterinary practices have played a vital role in sustaining livestock health in resource-constrained communities, though their scientific validation remains underexplored (Sharma et al., 2021).

While much research has been focused on individual plant species and their pharmacological properties, studies specific to respiratory diseases in livestock remain limited. Furthermore, many existing studies lack quantitative data to support the efficacy of these traditional treatments (Mbuni et al., 2020). A majority of the research is anecdotal or qualitative, relying on interviews with local farmers and healers without applying rigorous scientific methods to verify results. Consequently, there is a growing need to quantitatively assess the effectiveness of traditional remedies in specific health conditions like respiratory diseases in livestock, particularly in regions like Delhi NCR where both traditional and modern practices coexist.

Research Gaps

The research gaps identified are as follows:

1. Limited empirical evidence supporting the effectiveness of traditional plant remedies in treating respiratory diseases in livestock, especially in urban and peri-urban settings like Delhi NCR.
2. Lack of quantitative research analyzing the correlation between the frequency of traditional remedy use and the reduction in respiratory disease symptoms in livestock.

3. Objectives & Hypotheses

The objectives of the study are:

1. To assess the frequency of use of these traditional remedies and their perceived effectiveness in reducing respiratory symptoms in livestock.
2. To analyze the relationship between the use of traditional plant remedies and the reduction of respiratory disease symptoms in livestock.

The hypotheses of the study are given as follows;

H1: There is a positive correlation between the frequency of traditional plant remedy use and the reduction in respiratory disease symptoms in livestock.

H2: Traditional plant remedies have a significant positive effect on the treatment of respiratory diseases in livestock.

4. Research Methodology

4.1 Research Design

The study employs a descriptive and correlational research design using a quantitative approach to examine the relationships between the variables.

4.2 Sampling

The target population of this study was Households of Delhi NCR. A sample size of 409 respondents was chosen, sufficient to provide reliable data for statistical analysis. The study uses stratified random sampling to guarantee representation across diverse villages within Delhi-NCR.

4.3 Data Collection

A structured questionnaire designed to measure traditional plant remedy use and the reduction in respiratory disease symptoms in livestock using a 5-point Likert agreement scale. The survey was administered online using Google Forms, providing a quick and accessible way to reach a large number of respondents. The data collection procedure was conducted over six months, from January to June 2022, ensuring ample time for participants to complete the survey.

4.4 Data Analysis

Quantitative research commonly employs SPSS software, which was utilised to analyse the acquired data. To guarantee the internal consistency of the scales utilised, reliability analysis was performed using Cronbach's alpha. Data normalcy, an essential presumption for parametric tests, was checked using the Shapiro-Wilk test. Important data features, like the average and standard deviation, were summarised using descriptive statistics. To find out how traditional plant remedy use affect the reduction in respiratory disease symptoms in livestock, we ran multiple regression analysis and used Pearson correlation to look at how the variables were related to each other.

5. Results and Findings

5.1 Demographic Profile of Respondents

Table 1 presents the demographic breakdown of the 409 respondents surveyed in Delhi NCR. The gender distribution shows a slight majority of female respondents (58.4%) compared to males (41.6%). The largest age group is 35-44 years (31.8%), followed by 25-34 years (26.9%). In terms of education, most respondents have primary education (38.6%) or no formal education (24.9%), indicating a population with limited educational attainment. Household income data reveals that nearly half of the respondents (46.5%) earn below ₹5000 per month, with only 6.1% earning above ₹15000, highlighting the economic vulnerability of the sample.

Table 1. Demographic Information of Respondents

Demographic Variable	Category	Number of Respondents	Percentage (%)
Gender	Male	170	41.6
	Female	239	58.4
Age Group	18-24 years	70	17.1
	25-34 years	110	26.9
	35-44 years	130	31.8
	45-54 years	60	14.7
	55 years and above	39	9.5
Education Level	No formal education	102	24.9
	Primary education	158	38.6
	Higher secondary	90	22

	Undergraduate	45	11
	Postgraduate	14	3.4
Household Income	Below ₹5000	190	46.5
	₹5001 - ₹10000	142	34.7
	₹10001 - ₹15000	52	12.7
	Above ₹15001	25	6.1

5.2 Reliability Analysis

Table 2 table provides the reliability of the measurement scales used in the study. The Cronbach's Alpha values indicate good internal consistency, with traditional plant remedy use having a value of 0.85 and reduction in respiratory disease symptoms in livestock showing a value of 0.81. Both scores suggest that the questionnaire items used to measure these variables are reliable for the analysis.

Table 2. Reliability Analysis

Variable	Number of Items	Cronbach's Alpha
Traditional plant remedy use	10	0.85
Reduction in respiratory disease symptoms in livestock	10	0.81

5.3 Descriptive Statistics

In Table 3, the descriptive statistics summarize the key variables in the study: traditional plant remedy use and the reduction in respiratory disease symptoms in livestock. The mean score for traditional remedy use is 3.89 with a standard deviation of 0.78, indicating moderate variability among respondents. The reduction in respiratory disease symptoms has a mean of 3.71 and a standard deviation of 0.63, showing slightly less variability. The minimum and maximum values suggest that the perceived effectiveness of these remedies is generally high, with scores ranging from 2.1 to 4.89 on a 5-point Likert scale.

Table 3: Descriptive Statistics of Variables

Variable	Mean	Standard Deviation	Minimum	Maximum
Traditional plant remedy use	3.89	0.78	2.2	4.9
Reduction in respiratory disease symptoms in livestock	3.71	0.63	2.1	4.89

5.4 Correlation Analysis

In Table 4, the correlation analysis reveals a strong positive relationship between traditional plant remedy use and the reduction in respiratory disease symptoms in livestock, with a correlation coefficient of 0.69 ($p < 0.05$). This significant correlation supports Hypothesis 1, indicating that higher frequency of traditional remedy use is associated with greater reduction in symptoms, confirming the effectiveness of these remedies in managing respiratory diseases in livestock.

Table 4. Correlation Analysis Results

Variable	Traditional plant remedy use	Reduction in respiratory disease symptoms in livestock
Traditional plant remedy use	1	0.69**
Reduction in respiratory disease symptoms in livestock	0.69**	1

Note: $p < 0.05$; H1 Supported

5.6 Regression Analysis

In Table 5, the regression analysis results show that traditional plant remedy use has a significant positive effect on reducing respiratory disease symptoms in livestock, with a B coefficient of 0.31 and a t-value of 4 ($p < 0.05$), supporting Hypothesis 2. The model explains 69% of the variance ($R^2 = 0.69$), indicating a strong fit. The regression equation suggests that an increase in the use of traditional plant remedies significantly improves respiratory health outcomes in livestock, highlighting their efficacy.

Table 5. Regression Analysis for Hypotheses Testing

Predictor Variable	B (Unstandardized Coefficients)	Standard Error	Beta	t	p-value	R ²	Adjusted R ²
Constant	1.22	0.29	-	4.33	< 0.05	0.69	0.7
Traditional plant remedy use	0.31	0.09	0.34	4.6	< 0.05		

H2 Supported.

Regression Equation:

$$\text{Reduction in respiratory disease symptoms in livestock} = 1.22 + 0.31 (\text{Traditional plant remedy use}) \quad (1)$$

6. Discussion

The findings of this study highlight the significant role of traditional plant remedies in managing respiratory diseases in livestock within the Delhi NCR region (Barman et al., 2021). The strong positive correlation between the frequency of traditional remedy use and the reduction of respiratory disease symptoms confirms the value of indigenous practices in livestock health. These results align with existing literature that emphasizes the medicinal properties of plants like *Tulsi* and *Neem* in treating respiratory conditions (Verma et al., 2021). The regression analysis further demonstrates that traditional remedies contribute significantly to symptom reduction, suggesting that these practices may offer a viable alternative or supplement to modern veterinary treatments. However, while the remedies appear effective, the socio-economic factors influencing their use, such as household income and education level, warrant further exploration to optimize the adoption and integration of these remedies (Saxena, 2022; Sharifi et al., 2021; Vinuesa et al., 2020).

Despite the positive results, it is important to recognize that traditional remedies are often used in conjunction with modern veterinary practices, and this study does not measure their comparative efficacy. The significant correlation and regression results are encouraging, but they also raise questions about the long-term sustainability and scalability of these remedies in an increasingly urbanized context



like Delhi NCR. Future research should focus on understanding the long-term effects of these remedies, their economic viability, and how they can be integrated with modern veterinary care to promote better animal health outcomes.

7. Conclusion

This study concludes that traditional plant remedies play a vital role in treating respiratory diseases in livestock, particularly in resource-limited areas like Delhi NCR. The positive correlation between remedy use and symptom reduction suggests that these practices can effectively enhance livestock health, potentially reducing the dependence on expensive veterinary treatments. The significant impact of traditional remedies, as shown in the regression analysis, indicates that these methods are not only culturally relevant but also scientifically valid for managing common livestock health issues. However, the integration of these remedies with modern practices could offer even greater benefits for livestock health management in the region.

Limitations

The limitations of the study are as follows:

1. The study is based on self-reported data from livestock owners, which may introduce bias or inaccuracies in reporting remedy use and symptom reduction.
2. The study focuses on a specific region (Delhi NCR), limiting the generalizability of the results to other geographic areas with different cultural practices.
3. The effects of traditional remedies are not compared to modern veterinary treatments, which could provide a more comprehensive understanding of their relative effectiveness.
4. The long-term impacts of traditional plant remedies on livestock health were not measured, limiting conclusions about sustainability.
5. The study did not consider the potential side effects or risks associated with using traditional remedies.

Recommendations

The recommendations of the study are as follows:

1. Further research should be conducted to compare the effectiveness of traditional plant remedies with modern veterinary treatments to provide a clearer understanding of their relative benefits.
2. Policymakers and veterinary professionals should consider integrating traditional remedies with modern veterinary practices to create a more holistic approach to livestock health management.
3. Training and awareness programs should be implemented for livestock owners to ensure the safe and effective use of traditional plant remedies, minimizing any potential risks or side effects.
4. Future studies should explore the long-term economic and health impacts of using traditional plant remedies, including cost-effectiveness and scalability.
5. Expanding the research to other regions could provide a more comprehensive understanding of the role of traditional remedies in diverse cultural contexts.

References

- Ahmed, F., & Urooj, A. (2010). Traditional uses, medicinal properties, and phytopharmacology of *Ficus racemosa*: A review. *Pharmaceutical Biology*, 48(6), 672–681.



<https://doi.org/10.3109/13880200903241861>

- Ayrle, H., Mevissen, M., Kaske, M., Nathues, H., Gruetzner, N., Melzig, M., & Walkenhorst, M. (2016). Medicinal plants - prophylactic and therapeutic options for gastrointestinal and respiratory diseases in calves and piglets? A systematic review. *BMC Veterinary Research*, 12(1). <https://doi.org/10.1186/S12917-016-0714-8>
- Bandyopadhyay, A., & Dey, A. (2022). Medicinal pteridophytes: ethnopharmacological, phytochemical, and clinical attributes. *Beni-Suef University Journal of Basic and Applied Sciences*, 11(1). <https://doi.org/10.1186/s43088-022-00283-3>
- Barman, D., Das, A., Ahirwar, M. K., Singh, A. K., & Vikram, R. (2021). Practice of traditional herbal medicine in animal husbandry of rural India. *Annals of Phytomedicine: An International Journal*, 10(2). <https://doi.org/10.21276/ap.2021.10.2.67>
- Garcia, S. (2020). Pandemics and Traditional Plant-Based Remedies. A Historical-Botanical Review in the Era of COVID19. *Frontiers in Plant Science*, 11(August), 1–9. <https://doi.org/10.3389/fpls.2020.571042>
- Maibam, P., Sahi, V. P., & Singh, T. G. (2022). A Review of Medicinal Plants Commonly Used in Manipur: with Special Reference Against COVID-19. *Journal of Ayurvedic and Herbal Medicine*, 8(3), 204–208. <https://doi.org/10.31254/jahm.2022.8312>
- Mbuni, Y. M., Wang, S., Mwangi, B. N., Mbari, N. J., Musili, P. M., Walter, N. O., Hu, G., Zhou, Y., & Wang, Q. (2020). Medicinal plants and their traditional uses in local communities around cherangani hills, western Kenya. *Plants*, 9(3), 1–16. <https://doi.org/10.3390/plants9030331>
- Rehman, S., Iqbal, Z., Qureshi, R., Rahman, I. U., Sakhi, S., Khan, I., Hashem, A., Al-Arjani, A. B. F., Almutairi, K. F., Abd_Allah, E. F., Ali, N., Khan, M. A., & Ijaz, F. (2022). Ethnoveterinary Practices of Medicinal Plants Among Tribes of Tribal District of North Waziristan, Khyber Pakhtunkhwa, Pakistan. *Frontiers in Veterinary Science*, 9(March). <https://doi.org/10.3389/fvets.2022.815294>
- Saxena, R. (2022). *Role of Artificial Intelligence in Indian Education System*. 5, 104–107.
- Selvam, J. P., & Durai, M. (2018). *Study of Medicinal Plants Used for the Treatment of*. 7(12), 757–767.
- Sharifi, A., Ahmadi, M., & Ala, A. (2021). The impact of artificial intelligence and digital style on industry and energy post-COVID-19 pandemic. *Environmental Science and Pollution Research*, 28(34), 46964–46984. <https://doi.org/10.1007/s11356-021-15292-5>
- Sharma, A., Patel, S. K., & Singh, G. S. (2021). Traditional knowledge of medicinal plants among three tribal communities of Vindhyan highlands, India: an approach for their conservation and sustainability. In *Environmental Sustainability* (Vol. 4, Issue 4). Springer Singapore. <https://doi.org/10.1007/s42398-021-00196-4>

- Verma, S., Sharma, R., Deb, S., & Maitra, D. (2021). International Journal of Information Management Data Insights Artificial intelligence in marketing : Systematic review and future research direction. *International Journal of Information Management Data Insights*, 1(1), 100002. <https://doi.org/10.1016/j.jjime.2020.100002>
- Vidyasagar, G. M., & Siddalinga Murthy, S. (2013). Medicinal plants used in the treatment of diabetes mellitus in Bellary district, Karnataka. *Indian Journal of Traditional Knowledge*, 12(4), 747–751.
- Vinuesa, R., Azizpour, H., Leite, I., Balaam, M., Dignum, V., Domisch, S., Felländer, A., Langhans, S. D., Tegmark, M., & Fuso Nerini, F. (2020). The role of artificial intelligence in achieving the Sustainable Development Goals. *Nature Communications*, 11(1), 1–10. <https://doi.org/10.1038/s41467-019-14108-y>