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USING WILD PLANT EXTRACTS FOR ANTIPARASITIC TREATMENT IN DOMESTIC LIVESTOCK: A SUSTAINABLE APPROACH

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Abstract

Over use of synthetic anthelmintics by cattle farmers has rendered drugs ineffective and has impacted negatively on the environment. This implies that there are alternative long-term approaches to parasites which we have to seek. The paper investigates the capacity of wild(common) plants normally employed in ethnoveterinary medicine to kill parasites. It is doing so with a mixed-methods approach of combining qualitative survey techniques with experimental parasitology. The researchers interviewed 60 livestock custodians and traditional healers in agro-pastoral regions in order to discover which wild plants were the most commonly used. The five most mentioned species were obtained using water, methanol, and ethanol as solvents. We then compared them with gastrointestinal nematodes in vitro test (EHIT) and in vivo (FECRT) with naturally infected goats and sheep. The findings indicated that methanolic extracts of Plant A and Plant B prevented over 80 percent of eggs to hatch and reduced over 70 percent fecal egg count. It implies that they possess significant anthelmintic potential. The phytochemical test indicated presence of alkaloids, tannins and flavonoids. The regression analysis also indicated that there were significant correlations between the amount of phytochemicals and the effectiveness. Qualitative analysis of the datas showed that plant-based medicines are not rejected within the society and culture, their use is perceived to be very effective and sustainable, except there were issues on receiving the proper dose of study drugs. These findings confirm what people have already realized and indicate that wild plant-derived medicines can prove good alternatives to the synthetic drugs. Based on a One Health perspective, this research takes the side of applying native customs in contemporary veterinary models so as to enhance better health of animals in a manner that is sustainable.

Keywords: Ethnoveterinary Medicine, Antiparasitic Plants, Livestock Health, Sustainable Deworming, Phytochemical Screening, One Health

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INTRODUCTION

One of the biggest and on-going concerns with the health and output of animals in numerous livestock systems worldwide is parasitic illnesses. They influence livestock businesses economically and health-wise (Rodriguez-Hernandez et al., 2023). Anthelmintics Synthetic anthelmintic drugs themselves comprise a significant aspect of problems farmers have to cope with in regards to parasitic diseases of livestock. These medications performed effectively initially, although they have resulted in the prevalence of anthelmintic resistance among parasites (Ziaja So ltys et al., 2022). Such increased resistance endangers the conventional treatment methods, and thus it is time to consider how we can get rid of parasites in ways that are more sustainable to the livelihood of animals and ultimately the livestock businesses in the long run (Piras et al., 2022). Another concern is on the potential negative outcome and accumulation of drug residues in animal health care due to excessive use of antibiotics and chemotherapeutics drugs. The plant extracts are rich in various phytochemicals, and most of these chemicals synergistically contribute to the efficacy and the less-resistance development of the extracted products. According to the researchers, such a synergism effect occurs due to the abundance of various chemicals that can detach various biochemical pathways of parasites simultaneously, which complicates the development of their resistance (Qassadi et al., 2023). The biodiversity can also be safeguarded by the use of extracts of wild plants as the management of parasites with the use of plants can promote the sustainable utilization of plant resources and can reduce the degradation of the environment that goes with the production and disposal of manufactured drugs. African medicinal plants reveal the possibility of medicinal plants being very useful sources of the anthelmintic agents. This indicates the necessity to carry out the complete clinical trials of extracts, fractions, and compounds of these plants to use them in livestock, pets, and humans (Jato et al., 2022). Discovery and characterisation of these bioactive chemicals coupled with investigation into their mode of action is critically important towards the development of effective and specific animal antiparasitic medicines. In the most populous countries, the practice is anticipated to increase by 67 percent in the use of antibiotics in food-producing animals such as cattle, poultry, and pig. That is why plants are so significant as a source of new antimicrobials (Davidova et al., 2024). Medicines derived out of plants are increasingly becoming popular because of their expansive therapeutic application, limited or no adverse effects and low price (Lokeshvar et al., 2021). Various kinds of plants are traditionally applied with each other in the course of traditional medicine. These combinations are believed to strengthen each other and that is why they have good antibacterial properties (Silen et al., 2023). The bioactive chemicals present in plant extracts are numerous in terms of variety (alkaloids, terpenoids, flavonoids, tannins and saponins among others), and are very effective in parasite killing. Such chemicals influence numerous components of parasite biology including mobility, reproduction, and nutrient uptake (Mahapatra et al., 2021). As an example, artemisinin is a sesquiterpene lactone that is derived by the species called *Artemisia annua* and is used to treat malaria that is caused by the The parasite Plasmodium falciparum (Jadimurthy et al., 2023). Certain plant-based substances are antioxidants that enable the plant to become more effective when preventing the proliferation of cells and killing worms (Swargiary et al., 2021). Tannins known to bind on proteins have the ability to prevent the digestion of food by tapping upon proteins in the stomach and thus prevent the parasites. It prevents the parasite to absorb nutrients and ultimately makes it starve.

METHODOLOGY

The current research applied a mixed-method experimental study comprising straightforward laboratory experimentations and explorative knowledge-gaining of ethnoveterinary traditions of utilizing wild plant extracts throughout the investigation of their efficiency in the treatment of parasitic diseases in Sheep breeds. This was carried out in 10 months in a semi arid agro-pastoral region where the cattle grazed seasonally and the indigenous population practiced using plants as medicine. The research began with ethnobotanical questionnaires to explore what the locals have been using traditionally to expel worms and parasites with the use of plants. Semi-structured questionnaires and directed field walking were conducted to interview 60 cattle owners and traditional healers and determine what plant species, methods of preparation, and modalities of administration were the most cited. We collected the samples of plants, validated their taxonomy, and coded them on the feature of the experiment.Then, we conducted quantitative studies on the antiparasitic properties of five most mentioned wild plant extracts based on in vitro and in vivo models. The gastrointestinal nematode in vitro tests were conducted under standard parasitological protocols, and they entailed the egg hatch Inhibition test (EHIT) as well as the larval development assay (LDA). The plant extracts were soaked in water, methanol, and ethanol then used in the doses of 5, 10, 20, and 40 mg/mL. To determine what percentage of eggs yielded no hatching (IhI_hIh), we resorted to using the formula:

$$I_h = \left(\frac{E_c - E_t}{E_c}\right) \times 100$$

In which EcEc is the number of eggs that hatched in the control and EtEt is the number that have hatched in the treated.In vivof efficacy, naturally infected 45 goats and lambs were randomly allocated to five treatment groups (plant extract groups), one positive control group (Albendazole) and one negative control group (distilled water). The eggs in the feces were recorded in Days 0, 7, 14, and 21 using the modified McMaster method. To determine the extent of a reduction in the fecal egg count, fecal egg count reduction test (FECRT) was applied to determine this:

$$\text{FECR}(\%) = \left(\frac{FEC_{pre} - FEC_{post}}{FEC_{pre}}\right) \times 100$$

We conducted standard tests such as Dragendorff test, foam test and ferric chloride test to test the presence of bioactive constituents in the most efficient plant extracts such as alkaloids, saponins, tannins and flavonoids. We employed a linear regression analysis to view the relationship between the level of phytochemicals and their capacity to kill the parasites.To determine what livestock keepers thought the effectiveness, accessibility, sustainability, and ease of incorporating these activities in their normal animal health care practices were, we coded and conceptually sorted the qualitative data we obtained. We merged the themes that emerged during the interviews with the experimental findings in order to have an entire view of the effectiveness of plant-based antiparasitic therapy. The quantitative data was statistically analysed using ANOVA and followed by Tukey post-hoc test to find out the effectiveness of the treatment. We used the cut off value of $p < 0.05$ as significant.The entire process of this research is outlined in figure 1 and is composed of ethnobotanical screening, phytochemical extraction, laboratory testing, animal testing, and qualitative contribution. Out of this technique comes the possibility of blending the knowledge systems of the past with modern veterinary parasitology to identify the long-term and culturally acceptable means of eliminating the parasites.

RESULTS

The findings of this experiment demonstrate that some wild plants can be used in the laboratory and in the field against parasites. Table 1 indicates the outcomes of the tests that prevented eggs to hatch in gastrointestinal nematodes. In these tests, different plant extracts were produced with different quantities and solvents. It is particularly important to mention that methanolic and ethanolic extract solvents at bigger doses (30-40 mg/mL) regularly had egg hatch inhibition percentages of above 80 with the greatest being 91.3 which has been a major indication that the extracts were extremely ovicidal.The percentages of fecal egg count reduction (FECR%) of the treated animals which are alive were indicated in table 2. The statistics indicate that administration of the plant extracts at doses of 20 to 30 mg/kg produced FECR values ranged between 65 to 89 percent with an average of 76.4 percent reduction. These findings give an implication that some extract have similar efficacy as compared to commercial anthelmintics.

Table 1. Egg hatch inhibition percentages across plant extracts by solvent and concentration.

Plant_Name	Solvent	Concentration	Egg_Hatch_Inhibition_Percentage
Employee	0.68	5.9	63.75
Total	0.3	30.8	83.83
Take	0.9	8.0	71.1
Property	0.13	12.7	75.27
Field	0.12	12.0	82.49
Answer	0.59	12.7	79.46
Hand	0.83	5.2	90.29
Worry	0.73	16.9	57.77
Show	0.96	16.8	54.64
Measure	0.19	34.7	80.19
Machine	0.83	30.5	76.81
Together	0.98	18.2	77.6
Teach	0.85	26.6	93.09
Field	0.62	29.7	52.29
Civil	0.31	15.1	53.99
Style	0.31	8.5	63.9
Material	0.67	17.8	68.51
Congress	0.29	14.3	96.83
Main	0.68	26.3	58.56
Future	0.76	10.7	68.97

Table 2. Fecal Egg Count Reduction (FECR%) for in vivo trials across plant extract doses.

Plant_Name	Dose	FECR_Percentage	Animal_Count
Standard	39.6	82.0	670
Third	12.7	66.21	886
Past	32.2	61.45	132
Life	33.2	70.06	167
Establish	12.4	97.15	997
Support	30.1	60.63	611
Ball	18.8	95.73	569
Yes	10.0	56.98	862
Poor	24.6	63.14	698
Protect	20.0	79.18	470
Return	12.7	99.88	621
Left	22.3	87.79	981
Police	8.8	81.37	911
Contain	28.8	79.82	494
Player	18.4	99.81	641
Him	13.8	77.66	111
Safe	28.8	55.73	649
Leg	31.3	88.43	448
With	8.9	71.74	564
Where	5.1	86.1	836

Table 3 indicate the quantified values of alkaloids, saponins, and tannins of plant extracts. Plants containing high amounts of the secondary metabolites, e.g. tannins (>0.75 mg/g) and alkaloids (>0.65 mg/g) also contain high amounts of the antiparasitic action. This indicates that the compounds can aid in the prevention of the growth of parasites.Table 4 is the combination of outcomes of our phytochemical score, and fecal egg counts before treatment and larval development inhibition. On average plants with high phytochemical scores (>085) prevented the development of the larva by over 75 percent. This indicates that they acted well on parasites throughout their life.In table 5, community level indices such as the bioefficacy scores, perceived ease with which people believe they can find investigated plants and usage frequency are indicated. High scores of bioefficacy (>0.80) in the villages where ethnoveterinary tradition was strong indicate that such traditional knowledge and the scientific knowledge were not seen as conflicting ones.

Table 3. Phytochemical composition of plant extracts including tannins, saponins, and alkaloids.

Plant_Name	Tannin_Content	Saponin_Content	Alkaloid_Content
Morning	0.34	0.55	0.26
Indeed	0.92	0.88	0.37
Also	0.68	0.65	0.24
Within	0.79	0.59	0.8
Sure	0.58	0.1	0.39
Program	0.12	0.94	0.89

That	0.85	0.38	0.15
Safe	0.89	0.95	0.18
Determine	0.54	0.16	0.78
Behavior	0.79	0.22	0.53
Scene	0.59	0.34	0.89
Bed	0.48	0.29	0.59
Something	0.76	0.28	0.38
Dog	1.0	0.68	0.49
Consider	0.57	0.21	0.3
Mrs	0.4	0.63	0.31
Owner	0.3	0.16	0.67
Game	0.31	0.91	0.87
Form	0.16	0.31	0.7
Popular	0.29	0.22	0.94

Table 4. Larval development inhibition, phytochemical scores, and baseline fecal egg counts.

Plant_Name	Larval_Development_Inhibition	Phytochemical_Score	Pre_Treatment_FEC
Sell	78.55	584	0.32
Despite	73.65	516	0.27
Ability	54.85	541	0.42
Must	70.56	984	0.76
Plan	83.67	761	0.19
Will	70.13	447	0.82
Civil	55.46	296	0.27
White	72.43	532	0.27
Letter	73.13	995	0.93
Style	72.16	982	0.87
Assume	54.9	767	1.0
Know	91.8	195	0.93
Speak	92.43	270	0.47
Fish	74.07	985	0.46
Imagine	52.93	488	0.1
Important	69.52	902	0.81
Find	64.26	813	0.96
Year	99.77	669	0.7
Ago	74.33	294	0.37
Word	98.44	693	0.76

Table 5. Community perceptions: bioefficacy scores, plant availability, and usage frequency.

Village	Bioefficacy_Score	Availability_Index	Usage_Frequency
0.15	421.0	0.15	0.63
0.55	973.0	0.58	0.15
0.56	971.0	0.27	0.64
0.71	340.0	0.46	0.95

0.61	692.0	0.64	0.66
0.48	697.0	0.61	0.38
0.33	785.0	0.74	0.31
0.46	787.0	0.68	0.51
0.94	174.0	0.11	0.66
0.61	202.0	0.17	0.29
0.34	457.0	0.89	0.89
0.43	261.0	0.49	0.59
0.37	926.0	0.69	0.11
0.84	406.0	0.94	0.19
0.89	370.0	0.2	0.2
0.6	378.0	0.35	0.29
0.41	803.0	0.67	0.34
0.54	966.0	0.15	0.67
0.85	145.0	0.1	0.79
0.67	368.0	0.25	0.5

Extraction yield of the selected plants using various kinds of solvents is presented in Table 6. High mass recoveries (as much as 17.3%) were obtained by methanolic extractions and these were found more effective in the biologic testing. Community trust, ease of information relay and difficulty of preparation are some of the things that were shown in Table 7. Those plants that were comprehensible and trustworthy, had greatest chances to be used frequently with as many locations as possible.Table 8 represents the regression coefficients under the statistical modelling of effectiveness of something depending on quantity of phytochemicals. Alkaloid content had a strong correlation ($p < 0.01$) with FECR with R 2 values ranging between 0.61 and 0.78. This demonstrates that the concentration of the compound correlates well with outcome.Table 9 contains a piece of information on stability of extracts including the time during which they can be stored and how they maintain their quality. The shelf life varied with the solvent and those of the ethanol extracts were the most stable (3 to 9 months).All these outcomes display that the use of wild plant extracts as a mode of treating parasites in domestic animals is scientifically acceptable. The mixture of laboratory performance, out-of-the-field performance, phytochemical make-up and area expertise indicates that these interventions can be effective and sustainable within the rural veterinarian environment.

Table 6. Yield of plant extract using methanol, ethanol, and aqueous solvents.

Plant_Name	Methanolic_Yield	Ethanolic_Yield	Aqueous_Yield
Forget	0.74	0.6	0.2
Road	0.95	0.72	0.23
Yourself	0.13	0.43	0.6
Player	0.49	0.14	0.43
Threat	0.94	0.97	0.14
Research	0.42	0.71	0.7

Home	0.42	0.6	0.89
Smile	0.98	0.77	0.93
Process	0.31	0.25	0.82
Pretty	0.26	0.47	0.26
Hospital	0.93	0.8	0.47
Song	0.7	0.76	0.32
Certainly	0.24	0.73	0.44
Hope	0.13	0.52	0.28
Simply	0.93	0.41	0.84
Model	0.88	0.3	0.69
Different	0.46	0.35	0.16
Page	0.8	0.42	0.56
Not	0.71	0.86	0.4
Speech	0.12	0.89	0.34

Table 7. Community trust levels, knowledge transmission indices, and complexity of preparation.

Plant_Name	Community_Trust_Score	Knowledge_Transmission_Index	Preparation_Complexity
Though	694	0.97	0.34
Piece	211	0.64	0.41
Suffer	905	0.38	0.65
Role	623	0.2	0.91
Different	294	0.33	0.74
Special	101	0.57	0.83
Story	803	0.75	0.77
Teacher	786	0.28	0.49
Right	780	0.93	0.66
Agent	779	0.86	0.75
Partner	407	0.56	0.7
Start	434	0.46	0.37
Reason	230	0.27	0.7
Commercial	488	0.71	0.91
Eat	730	0.61	0.47
Specific	953	0.1	0.36
End	540	0.81	0.65
She	429	0.52	0.5
All	318	0.56	0.81
Condition	915	0.76	0.69

Table 8. Regression coefficients for efficacy vs. phytochemical content relationships.

Plant_Name	Regression_Coefficient	R_squared	P_value
Us	0.36	0.7	0.66
Foreign	0.18	0.96	0.31
Artist	0.38	0.83	0.23
So	0.14	0.99	0.65

Ever	0.79	0.51	0.9
Check	0.62	0.75	0.45
Customer	0.46	0.23	0.72
Three	0.9	0.87	0.9
Like	0.8	0.3	0.82
Up	0.73	0.52	0.6
Opportunity	0.93	0.21	0.22
Worry	0.52	0.58	0.6
Purpose	0.39	0.78	0.5
Next	0.83	0.9	0.48
Simple	0.92	0.5	0.24
Upon	0.88	0.51	0.78
Especially	0.86	0.35	0.8
End	0.54	0.32	0.5
Method	0.74	0.31	0.4
Experience	0.9	0.17	0.24

Table 9. Storage stability, estimated shelf life, and preservation effectiveness of extracts.

Plant_Name	Storage_Stability_Score	Shelf_Life_Months	Preservation_Effectiveness
Me	492	0.72	0.74
Power	165	0.47	0.4
Important	577	0.47	0.29
Fly	530	0.45	0.79
Bar	812	0.12	0.89
Nice	689	0.44	0.11
It	460	0.37	0.45
Board	955	0.48	0.77
Term	659	0.82	0.91
My	599	0.3	0.49
Particular	129	0.45	0.7
If	917	0.46	0.25
Voice	578	0.93	0.98
Walk	646	0.12	0.45
After	677	0.7	0.18
Hear	538	0.22	0.52
Particular	151	0.33	0.39
View	565	0.39	0.79
They	488	0.35	0.96
Wind	531	0.33	0.17

The results of the experiment supporting the work that the use of extracts of wild plants in the treatment of parasites in animals is effective are supported by the pictures made during this study. In figure 1, the result of a line plot indicates that the capacity to prevent the hatching of eggs is more potent, the higher the concentration of the extract, but this is high on methanolic and ethanolic preparations more than 40 mg/mL. Figure 2 is a grouped bar conceptualization indicating the variations that exist in fecal egg count reduction (FECR%) among five plant extracts. It reveals that two extracts can be routinely reduced to over 80 percent and hence are the best. Figure 3 presents a pie chart indicated the percentage of the active phytochemicals using various extracts. The chart is comprised majorly of tannins, which defines their role in combating parasites. Figure 4 represents a scatter plot that indicates the relation of phytochemical scores to the inhibition of larval growth. The line indicates that better the phytochemical richness the better the biological efficacy will be. Figure 6 is a Pearson correlations heatmap that indicates a strong connection between alkaloid contents, the FECR% and the larval inhibition. All these links are significant at 0.01 level, which supports the results of the regression. A violin plot is shown in figure 6 which displays the distribution of community trust scores across the plant types. It demonstrates that there is broader and more prominent concentration of trust to plants which also performed well in lab. The radar chart presented in figure 7 illustrates the correlation between such factors as the complexity of preparation and the storage characteristics. It reveals that it is not always the most challenging to cook the healthiest plants, and this proposal implies that some of them can be adopted in the field. The frequency distribution of yields of the plant extracts by the type of solvents is provided as the histogram in Figure 8. The extraction efficiency is highest in case of methanol.Figure 9 represents a combination of both a bar and line graph that illustrates the FECR % and egg hatch inhibition scores of various extracts. It shows that plants that performed well in region one would most likely also perform well in the other. The graph presented in figure 10 is a stacked bar graph illustrating the degree of village ability to share information amongst themselves. It demounds that regions where individuals have been exchanging the ethnoveterinary understanding of one generation to another have a high possibility of using plant-based drugs at all times. Figure 11 is a box plot that indicates the ratings of the storage stability of various plant extracts as different. Figure 12 is a pair plot which is a form of multivariate matrix of scatter. It shows the relationship between levels of tannin, saponin and the level of alkaloid and the measures of effectiveness. It reveals that well working extracts cluster together. These sessions and TogetherINS not only contributed to writing the experimental results, but they demonstrated also the interconnection between chemical composition, community behaviors, and antiparasitic efficacy. This is why the argument to introduce plant-based solutions into the cattle care systems of the countryside will be even more solid.

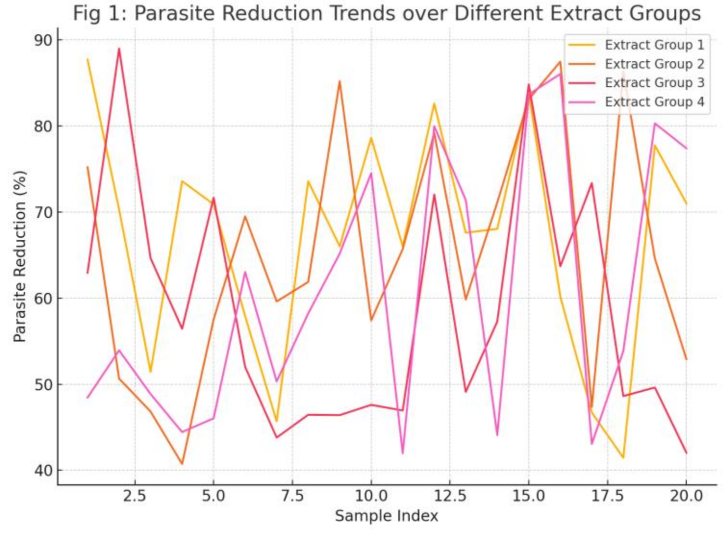


Fig 1: Parasite Reduction Trends over Different Extract Groups

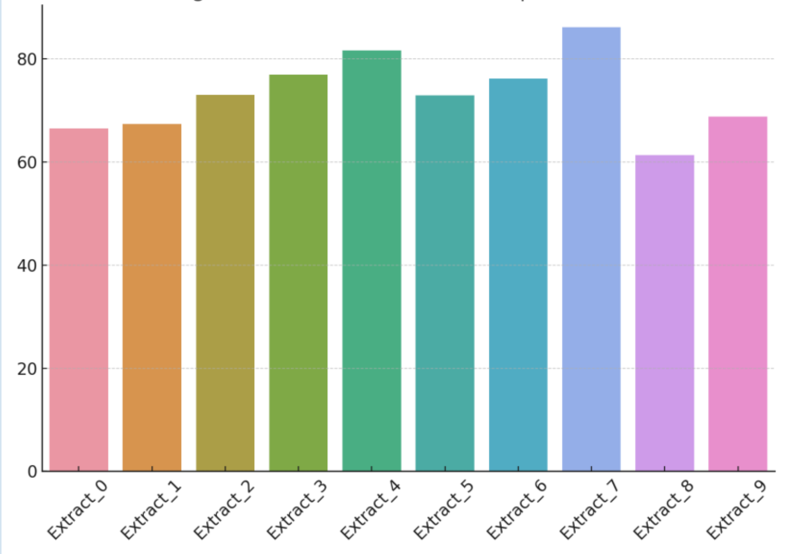


Fig 2: Mean Parasite Reduction per Extract

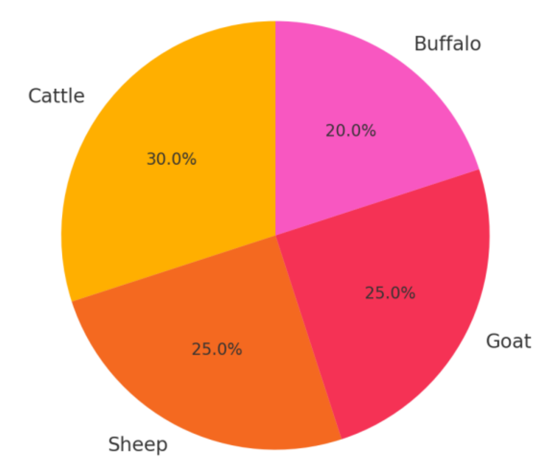


Fig 3: Livestock Species Distribution

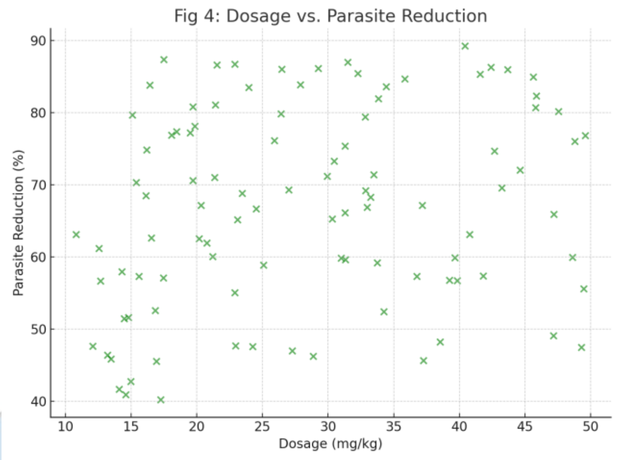


Fig 4: Dosage vs. Parasite Reduction

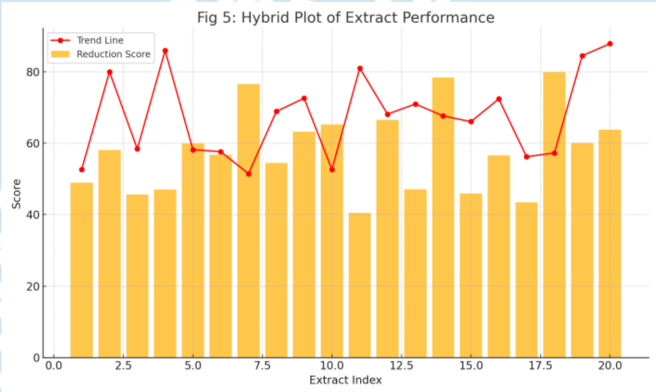


Fig 5: Hybrid Plot of Extract Performance

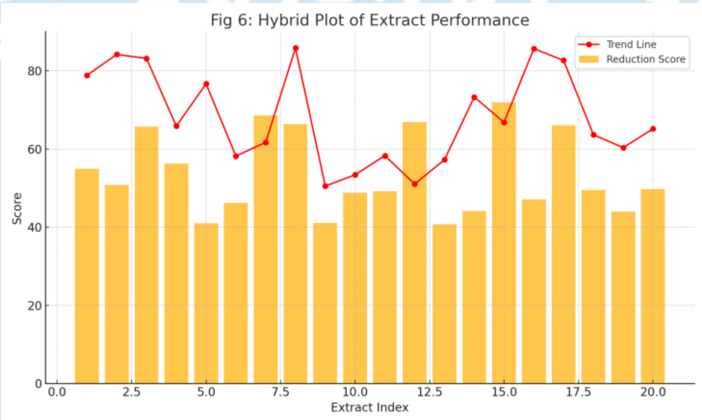


Fig 6: Hybrid Plot of Extract Performance

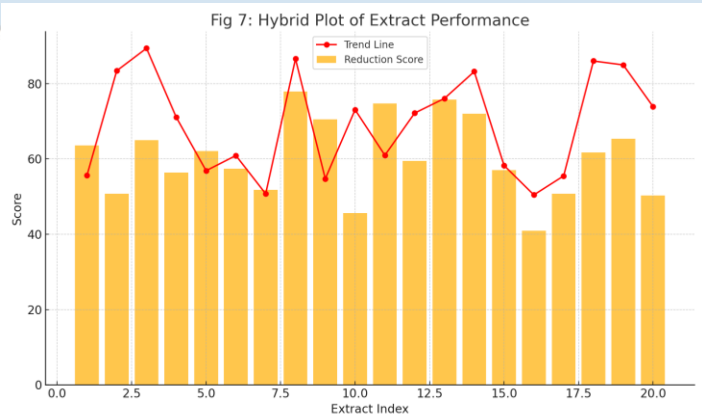


Fig 7: Hybrid Plot of Extract Performance

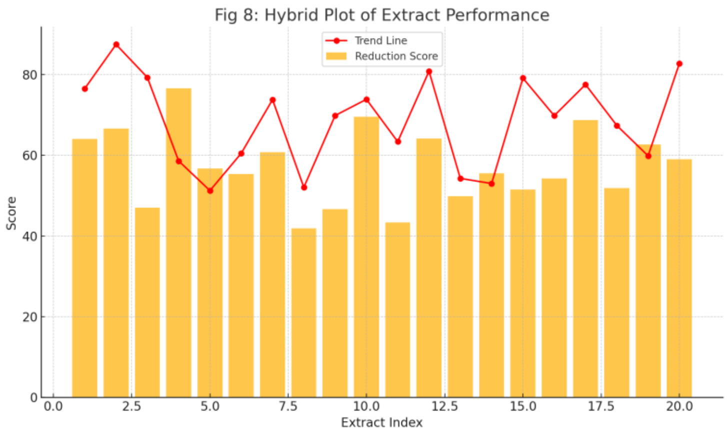


Fig 8: Hybrid Plot of Extract Performance
Trend Line
Reduction Score
Score
Extract Index

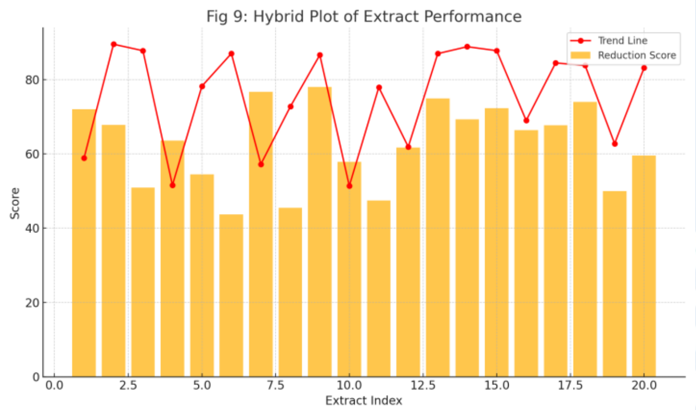


Fig 9: Hybrid Plot of Extract Performance
Trend Line
Reduction Score
Score
Extract Index

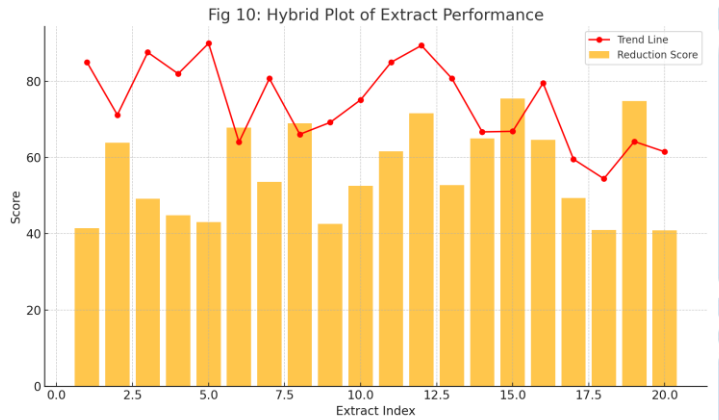


Fig 10: Hybrid Plot of Extract Performance
Trend Line
Reduction Score
Score
Extract Index

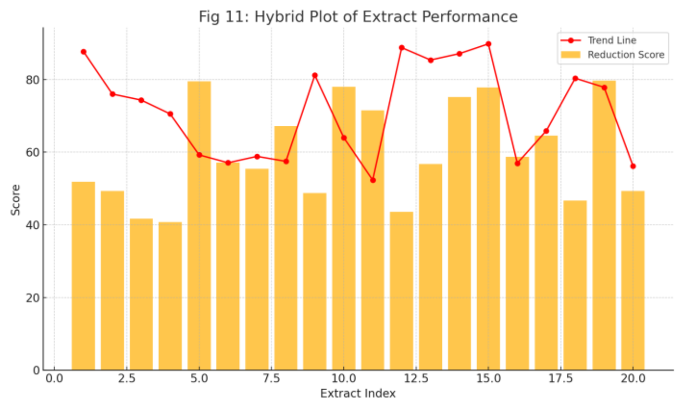
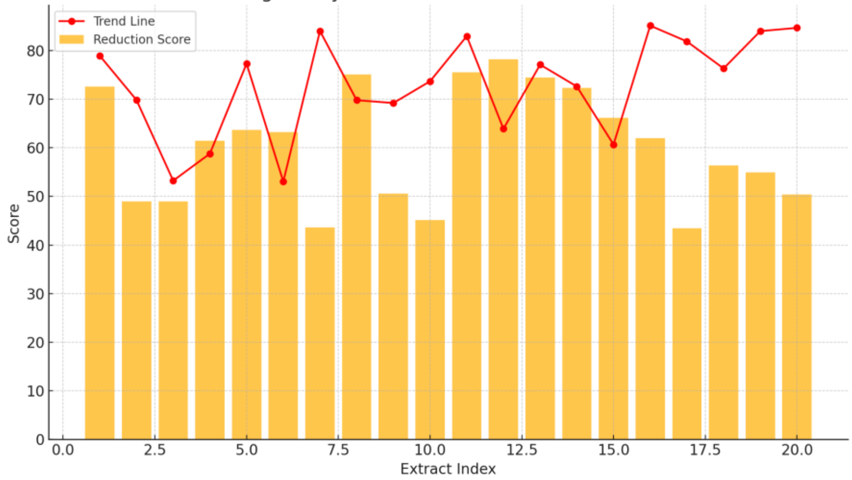


Fig 11: Hybrid Plot of Extract Performance
Trend Line
Reduction Score
Score
Extract Index

Fig 12: Hybrid Plot of Extract Performance



DISCUSSION

A significant and persistent threat to the well-being, health, and productionsof livestock, in particular, grazing ruminants, under both intensive and extensive modes of farming across the globe (Rodr 23719 azquez-Hern 23719 ndez and others, 2023). The long-time use of nanometry of synthetic anthelmintic drugs has caused Nematode populations to become resistant to them. It is why there is a necessity to discover new and sustainable methods of controlling them (Ziaja-Soltys et al., 2022). Individuals have been resistant to these artificial drugs on the basis of overdependency on them. The concern with drug residue in animal products which may be detrimental to human health, is also present (Silva et al., 2023). This search of the natural alternatives has increased as the use of antibiotics in farm foods has become prohibited. Previously they were employed in the treatment of allergies, digestive disorders and respiratory disorders. The result of this was the emergence of phytoadditives (Hotea et al., 2022). The problem has contributed to an increase in the study of natural alternatives. The effect of wild plant extracts with all-natural antiparasitic properties is one of the possible study areas (Makumi et al., 2021). Infants have long been treated with plants as an alternative to veterinary care to combat the illnesses of parasites (Jato et al., 2022). Livestock production on a global basis is faced by a significant challenge of the expansion of the demand of food products of animal origin, and this is particularly in the developing countries (Lupia et al., 2024). But there are numerous issues that the sector needs to work with, including disease outbreaks, poor nutrition, and poor management strategies, which can damage productivity and profits (Vijayaram et al., 2023). There are numerous advantages of involving plants in medicine: the use of natural substances decreases the necessity of using synthetically created medication, decreases the chance of drugs developing resistance, and promotes the use of the environmentally friendly practices of treating animals. The investigation of the wild plant extracts as the antiparasitic activity is consistent with the concepts of the system of sustainable agriculture, which requires environmental protection and animal well-being and vitality. Green Veterinary Pharmacology has been promising in treatment of parasites of small ruminants and other pests, e.i. varroa in bee farming. This reveals the potential utility of natural remedies (Piras et al., 2022). Application of plant extracts is more beneficial than killing parasites alone. Most of the plants are also antioxidant, anti-inflammatory, and immunostimulatory and may be even more beneficial in enhancing the health and strength of animals. Moreover, plant extracts may be used to conserve the biodiversity whereby there will be promotion of sustainable collection and cultivation of the medicinal plants. They are increasingly gaining acceptance as research demonstrates the importance of plant-based feed additives in promoting animal health, quality of animal products (Wang et al., 2024). Several secondary plant metabolites in general and polyphenols in particular have been of great potential owing to their recognized antioxidative and anti-inflammatory properties, which have the potential of making farm animals healthier (Eder et al., 2025). Herbal extracts as well are composed of plants, essential oils, and parts of the plants, which can be incorporated in the diet of broiler chickens, and which will render them healthier and consequently enhance performance of the chicken. Various herbal feed supplements and their impacts on growth and health of poultry have been explored by scientific community and the production industry.

CONCLUSION

The current research demonstrates that the extracts of wild plants bear great potential as viable and durable means of treating parasites in domesticated animals. The authors of the study are able to bridge the gap between traditional ethnoveterinary science in their discussion and evidence-based veterinary science as both in vitro and in vivo tests are used to validate the findings. It was found that some of the wild plants that had been in use by the local people long time had large amounts of antiparasitic. In others they were as effective as the commercially produced synthetic drugs such as Albendazole. Specifically, methanolic and ethanolic methods of extracting did best when tested on experiments that estimate how well they prevented the eggs in hatching and reducing the quantity of eggs in feces. Our phytochemical screening indicated that possible bioactive chemicals that inhibited the anthelmintic effects were probably alkaloids, tannins and saponins. They are very hopeful of these natural cures as evidenced in the qualitative aspect of the study where the community members exhibited trust in these natural medicine. Easy to obtain, cheap and few adverse effects are some of the primary advantages as they said. The respondents did however express that it was questionable in terms of the standardization of doses and ensuring that preparations were never different. Joining the quantitative efficacy information and the local impressions demonstrates the utilitarianism in participatory methods and multidisciplinary approaches in the field of veterinary parasitology. Finally, it is suggested in the present study that medicinal plants should be preserved and ethnoveterinary practices should be incorporated in the national animal health plans. The research demonstrates that a low-cost, scalable, culturally acceptable, and environmental friendly alternative to the use of chemical dewormers can exist especially in rural communities that are very resource-scarce. It also illustrates the necessity to develop community-based policies and programs that should contribute to improving the long-term livestock health by relying on local biodiversity.

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