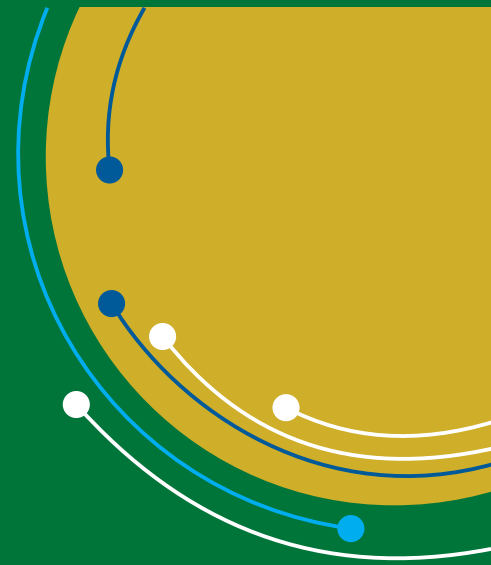


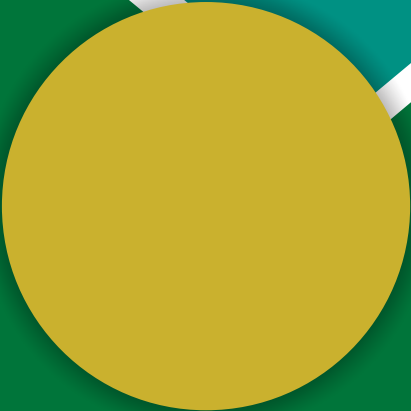
Phytotherapy: An Easy and Economic way to Cure the Gastro-Intestinal Parasites in Sheep



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Sheep production in Pakistan has an economic and social impact on rural farmers. Gastro-intestinal (GI) parasitic infection in young sheep, goat and cattle is a global problem having production losses up to 50%. Due to increase in drug resistance, there is renewed interest in ethno-veterinary medicine and plants with anthelmintic properties in both temperal and tropical countries. Various plant species have the ability to minimize the degree of parasite infection in sheep. The direct or indirect effect of improved mineral, trace elements and/or protein status of the livestock leading to reduced parasite intensity or improved immunity to nematode parasites. Identifying the mineral deficient pasture, feed and soil is important to boost the immunity of animals associated with the minerals. Trace minerals that have been identified as important for normal immune function and disease resistance are Zinc, Manganese, Selenium and Copper in many field conditions. Nature has blessed the rangelands of our country with a diversified nature of medicinal plants which are enriched with trace elements. It would be important to assess and correlate the current status of different minerals level in our soils, forages/medicinal plants and animals.

Objectives

- Determination of seasonal prevalence of GI parasites of indigenous breeds of sheep and their mineral profile.
- Determination of trace element contents (Cu, Co, Mn, Zn) in plants and soils of the respective grazing sites.
- Determination of the association between trace element profile and GI parasitic burden in naturally grazing sheep of the study sites.

Results

The highest prevalence of gastro-intestinal parasites was recorded 65.62% in district Chakwal during autumn 2014, followed in order by 34.11% in district Chakwal during spring 2015, 32.81% in district Sialkot during spring 2015, and 32.55% in district Sialkot during autumn 2014. Among variables like age, sex and breed, only sex was found significant in district Sialkot during autumn 2014 and spring 2015. In district Chakwal during autumn 2014, sex and breed was found statistically associated ($P < 0.05$) with GI parasites while during spring 2015, GI parasites was found statistically associated ($P < 0.05$) with age and sex.

During autumn 2014 and spring 2015, different forage species were identified with different concentration of selected trace elements (Cu, Zn, Mn, Co) in both districts. Mean concentration of Zn, Cu, Mn and Co in grazing field soils showed a non-significant ($P > 0.05$) variation among soils of different tehsils of Sialkot district during autumn 2014 and spring 2015. However, mean concentration of Zn, Cu, Mn and Co in grazing field soils showed a significant ($P < 0.05$) variation among soils of different tehsils of Chakwal district during autumn 2014, while non-significant ($P > 0.05$) during spring 2015.

Statistically, concentration of Zn, Cu, Mn and Co in serum showed no variation ($P > 0.05$) among different tehsils of Sialkot district during autumn 2014. While the concentration of all selected trace elements in serum showed variation ($P < 0.05$) among different tehsils of Sialkot district during spring 2015 except Co. In Chakwal district the concentration of all selected trace elements in serum showed variation ($P < 0.05$) among different tehsils during autumn 2014 except Zn. However, the concentration of Zn, Cu, Mn and Co in serum showed no variation ($P > 0.05$) among different tehsils of Chakwal district during spring 2015.

Conclusion

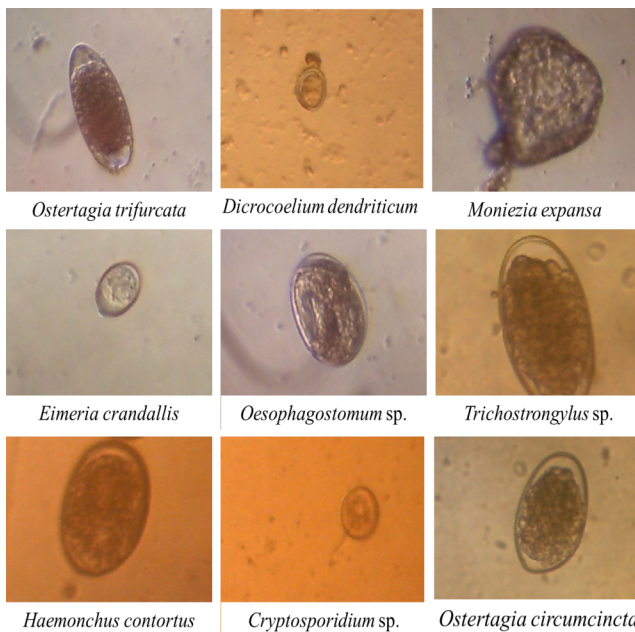
- Sex and breed was found significantly associated with GI parasitism.
- During autumn and spring, different forage species were identified with different concentration of selected trace elements (Cu, Zn, Mn, Co).
- Mean concentration of Zn, Cu, Mn and Co in grazing field soils showed a non-significant ($P > 0.05$) variation.
- Concentration of Zn, Cu, Mn and Co in the collected serum of sheep was varied significantly
- The mean concentration of Cu, Zn and Mn in serum is found inversely proportional to the mean EPG of sheep.



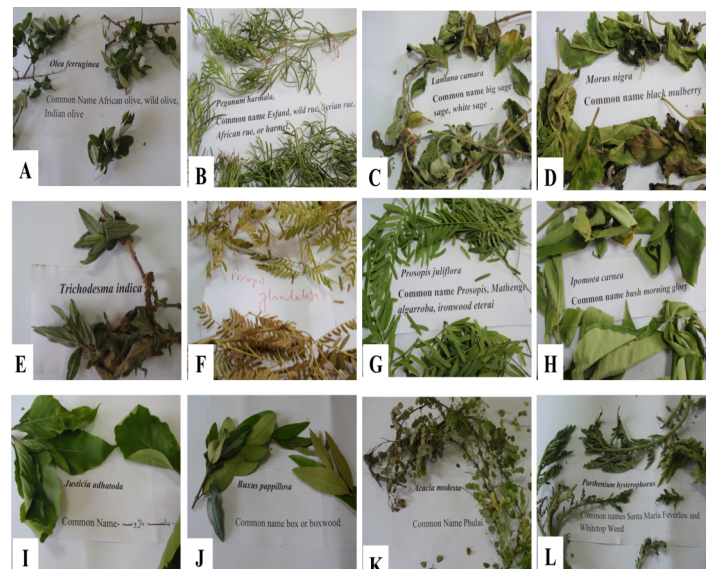
Collection of samples from selected districts of Punjab, Pakistan. A & B = collection of faecal and blood from sheep, C & D = collection of soil and plants from grazing site



Preparation of forages for pre-treatment of elemental analysis. A = identification of forages. B = separation of leaves. C = Forages were dried in incubator. D = grinding of plants.



Eggs identified in sheep population through conventional microscopic coprological examination (10x).



Forages collected from selected districts of Punjab, Pakistan. A = *Olea ferruginea*. B = *Peganum harmala*. C = *Lantana camara*. D = *Morus nigra*. E = *Trichodesma indica*. F = *Prosopis glandulosa*. G = *Prosopis juliflora*. H = *Ipomoea carnea*. I = *Justicia adhatoda*. J = *Buxus pappilosa*. K = *Acacia modesta*. L = *Parthenium hysterophorus*.