International Journal of Research and Innovations in Earth Science
Volume 3, Issue 1, ISSN (Online) : 2394-1375

Study on the Prevalence of Equine Strongly in and Around Mersa Town of South Wollo Zone, Amhara Regional State, Ethiopia

Samrawit Melkamu
Department of Animal health and Science, Mersa Agricultural college, ETHIOPIA
Corresponding author: M Samrawit; Email: amarech05@gmail.com

***Abstract* – The present study was conducted from July 2012 to September 2012 to determine the prevalence of GIT Equine strongyles in kelela woreda of four kebeles namely, Tritra, Shafi, Kobi and Degorach using simple floatation test. A total of 384 equine spp. were included in the present study 137 mules, 182 Donkeys, and 65 Horses in kelela woreda. Out of 384 fecal samples examined 75.9% Mule, 47.7% Horse, and 68.1%to be positive for equine strongylosis. A significant difference were observed ($p<0.05$)in prevalence of GIT equine among equine species and between body condition good 57.4%,medium 72.1% and poor 70.5% to determine high significant difference in the prevalence of GI Strongylus between body condition.**

Due exhausted body condition the prevalence of GIT equine Strongylus high in medium and poor body condition as compared to good body condition. The present study was not have a significant difference between sex (male 65.85 female 69.15), Age (adult 67.2% and young 68.2%) and in Altitude (mid land 68.2% and low land 66.7%) ($p>0.05$) .It is totally suggested that strategic parasitic control program should be design with regular evaluation to efficacy of the drugs used against GIT equine stronglosis.

Keywords – K, Coproscopy, Equine, Prevalence, Stronglosis.

I. NTRODUCTION

Livestock represents the major national resource and form an integral part of the agricultural production system and it is one of principle means of achieving and improving living standards in many regions of the developing world. The livestock population of Ethiopia is very high as it ranks first in Africa and tenth in world. (Assegid, 2000). And its livestock population was about 33.8 million cattle, 23.3 million sheep, 17.5 million equines (LZCA 1998). However productivity of livestock sector is lower than African in average. The low productivity of livestock is attributed to many factors; there are traditional husbandry and management system, poor nutrition, low genetic potential, poor productivity performance of the indigenous breeds and prevalence of epidemic and epidemic animal disease such as parasitic disease are the major factor that hinder the full productivity of livestock in Ethiopia (Asmamaw, 2002).

In Ethiopia livestock provides about 95%of required for cultivation (BOA, 1998). Historically equines have contributed much to human development and cultivations. Their survival can influenced by work loads stress, poor management and nutrition and also by disease. Among life treating disease of equine gastro intestine strongyles parasites tacking leading position. Though some of the equines strongyles are blood sucker and some are not the infection as usually mixed and consequently the general clinical signs can be considered to be caused by all the warms collectively. Specific clinical signs may due to the larval stage (Soulsby, 1986, Radostits *et al*., 1994).

Epidemiology of equine gastro intestinal parasite (strongyles in and around Assela was 62.8% from 400 samples taken according to the Jemal Suleman study 2008). In Amhara region much work has not been done on the disease of equines. Regarding to helminthosis of equines none has been performed in the worth eastern part of Ethiopia prior to this study.

Documents on the helminthosis of equines especially gastro intestinal parasite in equine stronglyles and other related prevalence's were not available in kelala woreda. Therefore the objectives of this study were:

- To determine the prevalence of gastro intestinal parasites(strongyles) in equine species in Kelala woreda
- To forward strategic control of equines strongyles in kelala woreda

II. LITRATURE REVIEW OF EQUINE STRONGYLES

2.1. *The Disease*

Equine strongyles have a well developed bacteria capsule on the dorsal wall of which there may be median thickening called the dorsal gutter, w/c carries the duct of the dorsal esophageal gland. The interior margin of the bucal capsul usually beard leaf like cuticular structures called the leaf crown or corona radianta . (Geoffery, 2000) The genus strongyles have the following etiology. these are *S. vulgaris,S.equinus* and *S. edentates* (Olt., 1932).

2.2. *Epidemiology*

Strongylus is a common disease of horses through the world and cause death when control measures are neglected. In areas with cold winter and mild summer, egg deposition peaks in spring and remains high over summer (Herd, 1985). Temperatures are suitable for larval development and massive contamination of infective larval may occur in late summer and early summer and early autumn when young susceptible horses are present *s.vulgaris* larval can over winter in considerable numbers in Europe. If the summers are hot and dry at only a small proportion of strongyle eggs develop to larval and these may be short lived but continual re infection keeps pasture contamination high(Eysker, 1987).

The onset of disease following ingestion of large number of larval depends on the maturation period of the

parasite in the host and whether it is immature or adult stage that is pathogenic. Out break of the disease due to the emergence of small strongyles after hypobiosis are commonly seen in Europe in let winter and early spring (winter or larval cyathostominsis) while arterial lesions due to larval *s.vulgaris* are first seen in late summer and reach a maximum by mid winter.(Mair, 1994).

2.3.1 *Species affected*

Horse, donkey & mule are affected by Strongylus spp.

2.3. *Life Cycle*

The life cycle is direct. Eggs passed in the faces typical strongyle and develop on the ground before hatching. They may hatch in as little as to hour. Larval are very resistant and may live years(at least 4) on the pastures in fecal masses and under suitable climatic conditions infective third stage larval from seven days on wards. As in many other parasite conditions, for survival of eggs and larvae is favored by shade, moisture and moderate temperature. Desiccation is particularly detrimental to their development. Some eggs and larvae with stand freezing temperature but development cease below 7.5 ^{0}C (46^{0}F) to be resumed when temperature increases. Optimum chances for infection of the host occurs in the early morning or evening when dew produces a moisture film on plants, or after rain both of which gives conditions that encourage larvae to migrate on pasture. The life cycles of all species are direct and horses become infected by ingestion of the infective larvae (Radostits *et al*, 2006). The free stages of *s.vulgaris* develop like that of *s.equines*. The behaviors of the parasitic larvae of these species are still being debated larvae traverse the wall of the cecum and colon and enter the smaller branch of hepatic portal vein by which they reach the liver and from this organs pass to the right side of the heart and the lungs from which they pass as larvae of ascaris lumbricoides do, up the trachea to the pharynx from which they are swallowed down in to the intestine to complete their development (Olt, 1932).

2.4 *Pathology*

Strongylus larvae occurs in many sub serious sites especially in the intestinal wall and the body cavities may contain an excess of lesions of varying size associated with *s.vulgaris* are common at the roof of cranial mesenteric artery and occasionally in the iliac artery . The affected arterial wall is greatly thickened and contains loculi on its internal surface of many of which contain living larvae lamellated thrombi are also common at this site and these are some times infected. Thethickining of the arterial wall often extends along the cecal colic arteries and complete occasions of these may be followed by gangrene of a segment of intestine. Similar lesions of arteries may be present at the base of the aorta .Spontaneous rupture of the vessels occasionally occurs.(Radostits *et al*., 2006). A significant correlation has been reported between lesions in the proximal aorta and the presence of focal ischemic lesions in the myocardium. These are trough to be caused by micro embolization causing arterio sclerotic lesions in the myocardial arterioles (Jamesetal, 1996).

2.5. *Pathogenesis*

The larvae of S. *vulgaris* are the most pathogenic causing arthritis,thrombosis and thickening of the walls of cranial mesenteric artery. Emboli may break away and lodge in smaller blood vessels, leading to partial or complete ischemia in part of intestine thus producing colic .The result of these depends on the length of segment of intestine affected and the ability of collateral blood supply to become established before necrosis and gangrene occurs.(Herd,1990).

Intussusuption are seen occasionally colic may be also be caused mesenteric artery on the thickened cranial mesenteric artery on the mesenteric plexus .The larvae of S.*vulgaris* are important because of their location in artery primarily the anterior mesenteric artery which supplies blood to the large intestine (Radostits *et al*., 2006).

Their attachment to the lining of the vessel causes roughened lining of vessel produce an ideal site of for fibrin and leucocytes to be taken out of the blood stream thrombi (Mandal, 2006).

Both large and small stronglyles damage the lining of intestinal wall at the attachment.Asthey wander from place to place abandoned are may ulcerate .Hemorrhage or become infected by bacteria .Infections see to be more sever in clots and young horse enough worms will produce anemia edema digestive disturbance and emaciation.(Mandal,2006).

2.6. *Clinical Signs*

Arteries in the cranial mesenteric artery, aorta, iliac artery are described in other migratory phase of S. *vulgaris* infection is associated with pyrexia, inappetance, depression, leucocytosis and intermittent or continuous colic (Duncan, 1973).

In more chronic cases there is persistent low grade fever poor appetite intermittent colic poor weight gain (Radostits *et a*l., 2006). Diarrhea may be present adult mares exposed to heavy s. vulgaris in let pregnancy may become very weak to the point of recumbence. On clinical examination the mucosa are palace, the heart rapid and loud and respiration moderately increase. Intestinal sounds are increased also the feces are normal. Abortion may occur and the mare usually dies. The simultaneous maturation of large number of hyper biotic larvae induces the condition known as winter or larval cyathostostominosis (Radostits *et al*., 2006).

2.7. *Diagnosis*

Strongyle Infection is ubiquitous. Although horse of all ages are infected. The younger animals are particularly liable to series injury. The worms carried by the older animals were as the important source of infection (Radostits *et al*., 2006). Examination of faces for detection strongyle egg, fecal culture for identification of strongyle larvae and per rectal examination reveals aneurysm of cranial mesenteric artery (Mandal,2006).

On some occasion when cythostome infection in the spring cause sever diarrhea thousands. However the number of strongyle eggs in the feces may be regarded as a general index of the .*strongyle* because it is known to occur widely along with other strongyles. Fecal culture examination can be used to diagnose the presence of adults

of this species by its characteristics third larval stage. Burdens may be associated with fecal egg count of only a few hundred eggs due to either to low fecundity of many immature parasites (Radostits *et al*., 2006).

2.9. *Economic Importance*

The large strongyles are the most important parasites of exerting a significant economic impact where ever horse are raised. Of the three species S.vulgaris affect 85 to90 %of horses particularly young .For these reason, it is considered to be the most important of equine endoparasite (Merial, 2001).

2.10. *Treatment*

Treatment may be targeted against immature and adult large and small strongyles worms in the lumen of the intestine against migrating strongyles larvae. Anti helmenthics vary in their efficacy against these larval stage .this influence the egg reappearance period (from treatment to the reappearance of egg in the faces as new adult worm population establish (Radostits *et al*., 2006).

For elimination of adult worms there is a wide choice of compounds and formulations for uses in feed as pastes or by tubing. The chemicals used for treatment of strongyles are ivermectin 0.2 mg/kg, benzimidazole 6mg/kg, fenbendazole 7.5 mg/kg mebendazole 5-10mg/kg oxibendazole 10mg/kg and tetra hydro pyrimidines (pyrantel) 19mg (Uhlinger *et al*., 1984).

2.11. *Control and Prevention*

Horse of any age can become infected and excrete egg. All grazing animals over two month of age should be treated every 4-8 week with an effective broad spectrum anti helmenthics (Urguha, 1996).

Any new animals joining treaded group should receive an anti helmenthics and isolated for 48-72 hours before being introduced .If possible paddock rotation system should adopt so that nursing mares and their foals do not graze the same area in successive years. Horse are housed in the winter treatment at the same time (Loves,1999).

Several sanitary and management practice will and in the control of strongyles. These are clean, dry stalls, protection of feed and water fro contamination with faces, frequency pick up of manure from paddock and pasture, manure composing, chain harrowing, clipping of pastures and rotation of animal species in pasture unfortunately with the advent of more effective medical agent (Herd, 1986). The purpose prophylactic chemotherapy in the control of strongylosis is to prevent the out put of strongylid egg on the pasture. Under conditions of heavy pasture challenge, regular dosing at 4-6 weeks with benzimidazole or pyrantel 8-10 weeks with ivermectin or 13-16 weeks with moxidectin is necessary through out period of risk (dopfer, 2004).

$n = \frac{Z^2 p \exp(1-p)}{d^2}$ where n =the sample size to calculated

$n = \frac{(1.96)^2 (0.5)(1-0.5)}{(0.05)^2}$

d = desired absolute precision value pexp = prevalence expected

$n = \frac{3.8416 \times 0.5 \times 0.5}{0.0025} = \frac{0.9604}{0.0025} = 384$ p = prevalence

III. Material and Methods

3.1 *Study Srea*

The study was conducted from July 2012 to September 2012 in Amhara regional state south wollo zone kelela woreda. Kelela located 160km western part of Dessie. It far from Addis Ababa 561km. The agro economical zone of kelala was mid land and low land. Total population of lived in this area was 144496. The animal population lived in this woreda are bovine 110600, ovine 30823,caprine 63625, equine 122448, and camel 6. The type of soil resents in this area sand, leum, clay and clay ileum. The major crops grown were teff, weat, sorghum, barely, beans and different vegetables. Annual rain fall of the woreda 700-1200 and annual mean $T^{o}{}_{17\text{-}27}{}^{oc}$ and the land use coverage in the woreda were cultivated land 51%, grazing land 15%, vegetation land 10%, and other 24%. The altitude of the woreda was 1200-2800 m.a.s.l. (CSA, 2005).

3.2. *The Study Animal*

A total of 384 equine species were studied which consists of horse, donkey and mule in the kelala woreda. Each animal was considered for study after knowing history, species, body condition, altitude of the area and approximate age. Age of animal was determined by using age determination chart developed based on dentition. Equine species were grouped in to two groups (categories). The animal under two year age young and beyond two years (above two year s) classified as adult. (Svendsen, 1997.

3.3. *Study Design*

3.3.1. *Fecal Sample Collection*

Fecal sample were collected from study equines (horse, donkey and mules) at kelela woreda Vet. Clinic and surrounding kebeles throughout the study period. The method of study design is cross 5ectional and simple random sampling was used the specimen was collected in universal bottle formalin 10%and refrigerator at 4^{o}c was used as preservative before working examination. Each sample was labeled with the animal number, species with corresponding the owners name, date, body condition and place of collection.

3.3.2. *Coprological Examination*

The collected samples were brought to kelela woreda vet. Clinic laboratory subjected to qualitative (flotation) technique as described by amourl, 1992 (annex IV)

3.4. *Sample Size and Sampling Method*

Across-sectional study design has seen conducted to estimate the prevalence of strong less in equine spices.

Simple random sampling was used to select animals from which sample was taken and size was determined according to Thrush field (1995).

There for the sample size required to determine the prevalence of the disease under question using sample sized 384 equine specie

3.5 *Data Analysis*

Data analysis was made using chi-square test and percentages were used to calculated the prevalence rates and by using computer micro soft excel sheet and using spss version 15.0 soft ware. Percentage (%) was obtained by dividing number of animals harboring a given stronyles to a total animals examined and Pearson chi-square test (x^2) test was used to assess association inthe prevalence of strongyles between the species equine sex, age, agro. ecology (altitude) and body condition categories. In all analysis the confidence level was held at 95% p.value < 0.05 was referred for significance level

IV. RESULTS

The Present study comprised of both qualitative and quantitative fecal egg analysis flotation techniques. A total of 384 fecal sample comprising 137 Mule, 182 Donkey and 65 Horses were subjected to corpological examination. The results obtained indicated that 75.9% Mule, 68.1% Donkey and 47.7% Horse were positive for GI Strongylus. There was statically significant ($p<0.05$) association on the prevalence of the disease on different species of equine.

Table 1. Prevalence each animal was considered e of GI strongylosis among equine species

Equine species	Total examined	Number of positives	Prevalence (%)	X^2	p. value
Mule	137	104	75.9	16.064	0.000
Donkey	182	124	68.1		
Horse	65	31	47.7		
Total	384	259	67.4		

df=2

This study was also carried out in two age groups young (<2years) and adult (>2years) out of 296 adult equine speceies 199 of them positive for GI Strongylus and out of 88 young equine sampled 60 of them positive. The prevalence rate was 67.2% in adult equine species and 68.2% for young equine species . There was no significant variation ($p>0.05$) b/n the two age groups.

Table 2. Prevalence of GI strongylosis in young and adult equines

Age	Total sample examined	Number of positive sample	Prevalence (%)	X^2	p. value
Adult	296	199	67.2	0.028	0.086
Young	88	60	68.2		
Total	384	259	67.4		

df=1

A total of 196 male and 188 female were examined and out of these 65.8%male and 69.1% female found to be positive for GIT strongylosis. There was no statically significant ($p>0.05$)between the two sex groups of equine.

Table 3. Prevalence of GI strongylosis by sex of equine species

Sex	Total sample examined	Number of positive sample	Prevalence (%)	X^2	p. value
Male	196	129	65.8	0.485	0.486
Female	188	130	69.1		
Total	384	259	67.4		

df=1

Prevalence of GI equine strongylosis with regard to altitude in kelela woreda 198 mid-land and 186 low land were subjected to simple floatation examination and out of these from mid-land 68.2% and from low land 667% found to be positive GIT strongylosis by testing floatation technique. There was significant variation ($p>0.05$) between the two agro ecological zones.

Table 4. Prevalence of GI strongylosis of equine according to its altitude

Altitude	Total sample examined	Number of positive sample	Prevalence (%)	X^2	p. value
Mid-land	198	135	68.2	0.100	0.751
Low land	186	124	66.7		
Total	384	259	67.4		

df=1

A total of fecal sample comprising 108 good,154 medium and 122 poor body condition equine were examined and out of these 57.4% good,72.1% medium and 70.5% poor body condition equines were found to be positive for GIT equine strongylosis. Over all medium body condition are more positive in my present study.There was significant variation ($p<0.05$)between the two agro ecological zones.

Table 5 Prevalence of GI strongylosis of equine according to its body condition

Body condition	Total sample examined	Number of positive	Prevalence (%)	X^2	P. value
Good	108	62	57.4	6.977	0.031
Medium	154	111	72.1		
Poor	122	86	70.5		
Total	384	259	67.4		

df=2

V. Discussions

The prevalence of GI equine stronglosis among equine species in the current study in kelela woreda revealed that from total sample 384 examined 259 equine species were positive which counts 67.4% prevalence. Of GIT equine strongylosis despite the study on comparative prevalence of GIT strongylosis of Donkeys, Horse and Mules in and around Assela 68.25% prevalence of GI strongylosis were observed according to Jemal Suleyman in around Assela, 2008 report. The present study when compared to the two different study areas in and around Assela and kelela woreda almost equal infection rate of equine GI strongylosis was observed.

Out of 384 fecal samples examined 75.9% Mules 68.1% Donkeys and 47.7% Horses were found to be positive for GI equine strongylosis. There was a significant variation($p<0.05$)among equine species, this is due to most donkeys and mules were managed in extensive grazing system and in my study area also lack of anti helminthes intervention program(Jemal,2008). Horses were highly susceptible for GI strongyles but in my study the prevalence of equine strongylosis in horses low as compared to other species, this was due horses in my study area keeps in intensive grazing system, because horses used mostly for the purpose of transportation and in order to get high cash income the owners keep the horses in good management system than donkeys and mules. So this statement was inagreed to (Jemal, 2008).

The prevalence of equine GI strongyles between donkey and mules was high in mules as compared to donkeys,this is duet o donkeys are naturally highly resistant for strongylosis (Fissha,1991).which was conducted in Banja woreda high and low land of Awi zone. It is also similar with the present study.

The prevalence of equine strongylosis on the fecal examination in adult equine species was 67.2% and in young equine species 68.2%.this implies that the prevalence of equine strongylosis infestation was not significant ($p>0.05$). Getchew *et al.*, 2008) in two age groups because of care to management system which avoid communal grazing of animals of all age groups together.

The present study shows that prevalence of equine strongylosis was not sex influences. The prevalence was indicated that male equine species 65.8% and female equines species 69.1% were observed. This study revealed that there was no statically variation between the two sex groups of equine species ($p>0.05$). This is agree with the work of Jemal, 2008.

There was a significance variation ($p<0.05$) association between body condition scores (BCS) of in equine strongylosis infection. The study revealed no association between body condition scores and the level of GIT equine strongylosis infection in equine species in kelela woreda. This implies that body condition scores was used to indicate the burden of parasites in good, medium and poor was 54.4%, 72.1% and 70.5% respectively. This study shows that prevalence of equine strongylosis higher in medium body condition and secondly highly occurred in poor body condition .This implies poor body condition animals get anti helmethic but medium body condition animals not always get anti helmenthic because of this all poor body condition is not affected by equine strongyles It also affected by other diseases so the prevalence of equine strongylosis not high always in poor body condition animals. The loss of body weight resulted by other cases, so we could not concluded that all poor condition animals expect high prevalence of equine GI strongylosis. The prevalence of fecal examination of GIT equine strongylosis in kelela woreda conducted in two different altitudes (mid-land and low-land) the prevalence was in significant ($p>0.05$)between the two altitudes. This is agree with Jemal,2008) study in and around Assela.

VI. Conclusion and Recommendations

In Ethiopia there is a less modern transportation system in rural areas and some cities. Equines are the most use full means of transporting both industrial and farm products in rural and cites. Helminthe parasites were playing a great damage in equine species and have high economic negative feedback. Due to this detailed study conducted the veterinarian render their performance in control, management system, healthcare and housing system of equine species. Based on this study a lot of equines graze in free pasture causes contamination of equine strongylosis and facilitate prevalence of the disease .Sex, age, body condition and altitude have a great effect in prevalence of equine GI strongylosis but the present

study body condition and different equine species highly significant variation for the occurrence of strongylosis.
Based on the above conclusion the following recommendations were for warded.

- Free gazing of a lot of equines species in small grazing area should be avoided.
- Strategic GI equine strongylosis control should be identified.
- Equines have a great economic importance but this awareness not known by different individuals, so extension program should be forwarded by governmental organization and nongovernmental organizations.
- Decrease high workload in equine species to keep its body weight in normal state.

REFERENCES

[1] Assegid, M. (2002): Constraints to livestock and its product in Ethiopia, policy implication DVM thesis, Faculty of veterinary medicine Addis Ababa university, Debrezeit, and Ethiopia.
[2] Asmamaw, K. (2002): Descriptive study of husbandry practice and their effect on the diary cows in Small holder system in and around debrezeyit DVM thesis, Faculty of veterinary medicine Addis Ababa university Debrezeit Ethiopia.
[3] BOA, (1998): The role of livestock and impact of animal disease on the economy. Dopfer D (2004): Veterinary parasitol Pp, 124-249.
[4] CSA, (2005): Central Statistical Authority.
[5] Eysker M and Wemmenhove R(1997) veterinary parasitol p, 69,87.
[6] Fisseha.G,Mohammed.A, and Yilma.J(1991);Vermicular endo parasitsm in donkeys of Debre zeitaand menagasha and strategic treatment with ivermectin and fenbendazole .donkeys,mule,and horses in tropical agricultural development proceeding of colloquium organized by the Edinburgh school of agriculture and the center for tropical vet. Medicine 3rd to 6th Edition Pp151-154.
[7] Geoffery (2000): reprinted veterinary helmenthology and entomology fourth edition Pp, 177-182.
[8] Getachew .M, Fisseha.G, Trawford.A and Reid.J.W (2008): Seasonal pattern in the strongyle fecal worm egg count of working equids of the central midlands and lowlands of Ethiopia Tropical animal health and production Dollo,1007/511250-008-91442-5Pp2-6.
[9] Herd, R. (1985): Epidemiology and control of equine strongylosis at a new market Equine veterinary parasitol Pp,17-202.
[10] Herd,.R. (1986): Equine veterinary parasitol .Pp:8-447.
[11] Herd, R. (1990): Equine vet.education Pp:(2-41) .
[12] ILCA, (1998): Animal reproduction for African countries report of joint seminar by international foundation for scince and Swedish international program animal production.
[13] James .R, Roony.J,Robert. S (1986) vet.parsitol,p 482.
[14] Jemal, S. (2008): The study on the prevalence of GI strongyles among equine species in and around Assela and to asses the magnitude of this parasitism in relation to age sex and management system DVM thesis Faculty of Veterinary Medicine Addis Ababa University Debrezeit, Ethiopia.
[15] Love, S.(1999): veterinary parasitol Pp:18-447.
[16] Mair, (1994): veterinary parasitol Pp:135-598.
[17] Mandal, S. (2006): Veterinary parasitol 1st edition Pp 177-178.
[18] Olt, (1932): Dtsch, tierarztl, wschr, 40(21) Pp 326-332.
[19] Rodostits, O., Gay, C., Hinchliff, K.W. and M. Constable P .(2006):Veterinary medicine A text book of the disease of cattle, sheep, goats, pigs and horses 10th Spain Solomon G.(2010): Standard vet. diagnostic manual for economic important Gastrointestinal parasites of domestic animal Helmenthology lab. Addis Ababa, Ethiopia. sounders Elseviers Blood Pp:1558-156.
[20] Souls, E.J. (1986): Helmenths,Arthropods and the protozoa of domestic Animal 7th edition
[21] Svendsen, (1997): Donkey abroad the professional hand book of the donkey (3rd) edition white books limited London UK Thrusfield M (1995) Vet epidemiology 2nd edition UK black well science LTD. Pp 182-1988.
[22] Uhinger, C. and Johnston, C.J, (1984): equine veterinary science Pp 4-7.
[23] Urguha, T. (1996): Veterinary parasitology 2nd edition Pp: 42-47.

VII. ANNEXES

Annex 1: Determination of age of equines species
Age: Identification
Young under two years as young (<2years)
Adult Beyond two years grouped as adult (>2years)
Source :svendsen(1997)

Annex 2: Data collection on prevalence of GI strongylosis format

ID No.	Spp.	Age	Sex	Body condition	Result

Annex 3: body condition score

Body condition	Neck and shoulders	Withers	Ribs and belly	Back and loins	Hind quarter
poor	Neck thin all bones easier felt neck meets felt easier angular	Dorsal spine withers prominent and easily felt	Ribs can be seen from distance and felt with easy belly tucked up	Back bone prominent can be felt dorsally and transversally	Hip bones visible and felt easily (hook and pin bones) little muscle cover the area
Medium	Good muscle develop over lying	Some cover over dorsal withers	Ribs not visible but	Dorsal and transverse	Poor muscle core on hind quarters,

	bone slight step were neck meets shoulder	spines processes felt but not prominent	can be felt with ease	process felt with light pressure. Poor muscle development either side, midline	hip bones felt with ease
Good	Good muscle development on bones can be felt under light cover of muscle fat neck flows smoothly into shoulder with rounded	Good cover muscle fat over dorsal spines processes withers flow smoothly in to back	Ribs just covered by light layers of fat muscles, ribs can be felt with light pressure. Belly from with good muscle tone and flattish out line.	Can not feel individual spines transverse processes muscle development either side of mid line is good.	Good muscle cover in hind quarters ship bone rounded in the appearance can be felt with light pressure.

Sources : (Svendsen, 1997).

Anex 4: Simple flotation method

1. Make approximately 3 gm of well mixed of faces in to A baker or plastic container. If the faces are pelleted, grind it by using pestle and mortar.
2. Add saturated flotation fluid (45-50ml) and mix thoroughly.
3. Pour the fecal suspension through a tea strainer to remove large fecal debris (you can also use double layers of gauze).
4. Pour the suspension in to a test tube until a convex meniscus is formed.
5. Cover with a cover slip by avoiding trapping air bubble.
6. Allow it to stand 15-20 minutes.
7. Remove the cover slip vertically and place it one slide and examine under the microscope.
8. You can also simply leave the suspension in its beakers or test tubes for the above stated time with out placing a cover slip after 10-15 minutes. The surface film (supernatant part) can be removed by simply pressing or touching with glass rod wired loop and transfer the few drops adhering to microscopic slide.
9. Cover it a cover slip and examine as above.
10. The standing time can also be reduced by centrifuging the suspension at 1500 rpm for 2 minutes and the supernatant examined as above (Solomon.,2010)

TABLE OF CONTENTS

PAGE

In the present study higher prevalence of gastrointestinal parasite infestation was noticed in equines particularly with Strongyle spp. and Parascaris equorum. Therefore, strategic prevention and control of gastrointestinal parasite infestation is very crucial in current study area. Keywords: Equines; Gondar town; Strongylus; Parascaris equorum. Introduction.Â The study was conducted in and around Gondar town, Amhara. National Regional State, Ethiopia. Gondar town is located at 728 Kilometers far from Addis Ababa at an elevation of 2133 m.a.s.l. The city has a latitude and longitude of 12Â°36'N 37Â°28'E / 12.6Â°N 37.467Â°E. Rain fall varies from 880-1172 mm with the average annual temperature of 19.7Â°C. The area. A cross-sectional study was carried out to determine the Prevalence of Major Intestinal Nematodes of Equines in Jimma Town from October, 2015 up to March, 2016. Purposive sampling was employed to select kebeles and households keeping horse in Jimma town followed by simple random sampling to select study animals from the selected households.Â Table 1: Overall prevalence of equine Intestinal nematodes in equine species basis. Species of Animal.Â South and North Wollo zone. However it is in agreement with work done by Sinasi and Mustafa (2009) who reported prevalence of P. equorum (14.45%) and O. equi (4.82%) and Sotiraki, (1997) who reported the prevalence of strongyles 64%. Geographically the area is found in South Wollo zone, Amhara region. It is located at 11012â€™36â€ -11018â€™36â€ N latitude and 39031â€™12â€-39034â€™12â€ E longitude. Kutaber area poses highland and lowland areas.Â The study has investigated the prevalence of ovine fasciolosis in sheep reared under extensive farming system in Kutaber district of the Amhara regional state, central Ethiopia. The result of the present study indicated that fasciolosis is a higher prevalent sheep disease in the study area. This parasitic disease is distributed in every district and considered as one of the major setbacks to sheep product utilization causing direct and indirect losses. Gondar Town, North Ethiopia Awake Menzir, Debeb Dessie Jimma University, College of Agriculture and Veterinary Medicine School of Veterinary Medicine Jimma, Ethiopia; phone: +251 910 961 811 menzirawake@yahoo.com.Â Animals for this study were cattle in and around Gondar During sample collection the date, age, sex and town.Â This present study it was found that prevalence of lung worm might be because of the reason that cattle are infected by infections was only investigated from coproscopic ingesting grass contaminated with larvae through faecal examination of young animals, 3.1% (12 of 386) and no transmission,[7] and lungworm infection in extensive prevalence was seen at post mortem investigations, 0% (0 farming. In West part of Amhara Regional State bordering the Abay river, one of the North Western tsetse belt areas of Ethiopia, tsetse transmitted Trypanosomosis is becoming a serious threat for livestock production and agricultural activity (Shemelis et al 2005). The Amhara Bureau of Agriculture and Rural Development has already prepared a control strategy for three years.Â A study was conducted in three peasant associations (PAS) in Mecha Woreda of west Gojjam zone in Amhara Regional State, North West Ethiopia located about 525 km North West of Addis Ababa and 34 km south east of Bahir Dar the capital city of Amhara region.