

Veterinary Parasitology

1. General introduction

- 1.1 Terms applied in parasitology.
- 1.2 Types of parasites and their hosts.
- 1.3 Effect of parasites on their hosts.
- 1.4 Nomenclature of parasites.
- 1.5 Classification and characteristics of various phyla(Protozoa, Platyhelminthes, Nematelminthes, Acanthocephala, Annelida and Arthropoda).
- 1.6 Scheme followed in parasitological studies.
- 1.7 Parasitological immunology.

2. Cestode (Tape worm) parasites, Class- Cestoda

Morphology, life cycle, pathology, symptoms, diagnosis, treatment and prevention of important Helminth parasites of following families in animals and birds.

- 2.1 Order 1. Cyclophyllidea (Family1. Mesocestoididae, Family2. Anoplocephalidae, Family3. Thysanosomidae, Family4. Davaineidae, Family5. Dilepididae, Family6. Dipylidiidae, Family7.Hymenolepididae and Family8. Taeniidae)
- 2.2 Order 2. Pseudophyllidea (Family1 Diphyllbothridae)

3. Trematode (Flukes) parasites, Class-Trematoda

Morphology, lifecycle, pathogenesis, symptoms, diagnosis, treatment and control of veterinary important monogenetic and digenetic flukes of following families.

- 3.1 Monogenetic trematodes (Family1. Gyrodactylidae and Family2. Dactylogyridae)
- 3.2 Digenetic trematode (Family1. Dicrocoeliidae, Family2. Heterophyidae, Family3. Plagiorchiidae, Family4. Prosthogonimidae, Family5. Opisthorchiidae, Family6. Notocotylidae, Family7. Echinostomidae, Family8. Paragonimidae, Family9. Fasciolidae, Family10. Paramphistomidae, Family11. Diplostomatidae, Family12. Strigeidae, Family13. cyclocoelidae and Family14. Schistosomidae)

4. Nematode parasites

- 4.1 Class Nematoda
- 4.2 Morphological features, life cycle, pathogenesis, symptoms, diagnosis, treatment
- 4.3 And control measures of veterinary important nematodes of the following families.
 - 4.3.1 Sub class-1. -Secernentea
 - Order1. Ascaridida (Family1. Ascarididae, Family2. Anisakidae,Family3. Oxyuridae, Family4. Kathlamidae, Family5. Heterakidae and Family6. Subuluridae).
 - Order 2. Rhabditida (Family1 Rhabditidae and Family2 Strongyloididae),

Order 3. Strongylida (Family 1. Strongylidae, Family 2. Trichonematidae, Family 3. Amidostomidae, Family 4. Stephanuridae, Family 5. Syngamidae, Family 6. Ancylostomatidae, Family 7. Trichostrongylidae, Family 8. Dictyocaulidae, Family 9. Metastrongylidae, Family 10. Protostrongylidae, Family 11. Filaroididae.

Order 4. Spirurida (Family 1. Spiruridae, Family 2. Thelaziidae, Family 3. Aquaridae, Family 4. Tetrameriidae, Family 5. Physaloteridae, Family 6. Gnathostomatidae, Family 7. Filariidae, Family 8. Setariidae, Family 9. Onchocercidae and Family 10. Dracunculidae)

Subclass-2.–Adenophorea

Order 1. Enoplida (Family 1. Trichinellidae, Family 2. Trichuridae, Family 3. Capillaridae and Family 4. Dioctophymatidae)

5. Acanthocephala and Annelids parasites

Morphology, life cycle, pathogenesis, symptoms, diagnosis, treatment and control of following species of Acanthocephala and Annelids in animals and birds.

5.1 Phylum-1 Acanthocephala

5.1.1 Order 1. Palaeacanthocephala (Polymorphidae- *Polymorphus* and *Filicolis*)

5.1.2 Order 2. Archiacanthocephala (Oliacanthorhynchidae- *Macrocanthorhynchus* and *Oncicola*)

5.2 Phylum-2 Annelida (Hirudinea- *Hirudo*, *Limnatis*, *Haemadipsa*)

6. Veterinary Entomology (Phylum-Arthropoda)

Morphology, life cycle, disease transmission, diagnosis, treatment and control of following Veterinary important arthropods parasites.

6.1 Class 1. Insecta,

6.1.1 Sub class 1 Pterygota

6.1.1.1 Division 1. Exopterygota

Order 1. Mellophaga e.g., Biting lice S.order 1. Amblycera (e.g., *Menopon*, *Menacanthus*, *Heterodoxus*) S. order 2 Ischnocera (e.g., *Cuclotogaster*, *Goniodes*, *Goniocotes*, *Columbicola*, *Damalina*, *Bovicola*, *Trichodectes*, *Felicola*,) S. order 3 Rhynchophirina (Hymatomyzidae e.g., *Haematomyzus elephantis*).

Order 2. Siphunculata (Anoplura) e.g., Sucking lice (Family 1. Haematopinidae, e.g., *Haematopinus*, Family 2. Linognathidae, e.g., *Linognathus*, *Solenopotes*, Family 3. Pediculidae e.g., *Paediculus*, *Pithirus*,

Order 3. Hemiptera (Family 1. Cimicidae i.e., *Cimex*, Family 2. Reduviidae i.e., *Triatoma*.

6.1.1.2 Division 2. Endopterygota

Order 1. Siphonaptera (Aphanaptera) e.g., fleas

Order 2. Diptera (true flies), Sub Order 1. Nematocera (Family 1. Ceratopogonidae e.g., *Culicoides*, Family 2. Simuliidae e.g., *Simulium*, Family 3. Psychodidae e.g., Sand flies, Family 4. Culicidae e.g., Mosquitoes. Sub Order 2. Brachycera (Family 1.

Tabanidae e.g., *Tabanus*, *Chrysops*, Sub Order 3. Cyclorrhapha, Series 1. Aschiza (Family 1. Syrphidae e.g., *Eristalis*. Series 2. Schizophora (Family 1. Gasterophilidae

e.g., *Gasterophilus*, *Cobboldia elephantis*, Family 2. Muscidae e.g., *Musca*, *Muscina*, *Fannia*, *Stomoxys*, *Haematobia*, Family 2. Glossinidae e.g., *Glossina*, Family 3. Calliphoridae, Sub family 1. Calliphorinae e.g., *Lucilia*, *Calliphora*, *Formia*, *Chrysomyia*, Sub family 2. Sarcophaginae e.g., *Sarcophaga*, *Wohlfahrtia*. Family 4. Oestridae e.g., *Oestrus*, *Hypoderma*, Family 5. Cuterebridae e.g., *Dermatobia*, Section Pupipara (Family 1. Hippoboscidae e.g., *Hippobosca*, *Mallophagus*, *Pseudolynchia*).

6.2 Class 2. Arachnida Order 1. Acarina, Sub order 1. Mesostigmata (Family 1. Dermanyssidae e.g., *Dermanyssus*, *Ornithonyssus*, *Pneumonyssus*, Family 2. Gamasidae e.g., *Raillietia*).

Sub order 2. Ixodoidea (Family 1. Argasidae e.g., *Argas*, *Otobius*, *Ornithodoros*, Family 2. Ixodidae e.g., *Boophilus*, *Hyalomma*, *Rhipicephalus*, *Haemaphysalis*, *Dermacentor*, *Amblyomma*, *Rhipicentor*, *Ixodes*).

Sub order 3. Trombidiformes (Family 1. Trombiculidae e.g., *Trombicula*, Family 2. Pediculidae e.g., *Pediculoides*, Family 3. Demodicidae e.g., *Demodex*).

Sub order 4. Sarcoptiformes (Family 1. Sarcoptidae e.g., *Sarcoptes*, *Cnemidocoptes*, Family 2. Psoroptidae e.g., *Psoroptes*, *Chorioptes*,

6.3 Class 3. Pentastomidae (Family 1. Linguatulidae e.g., *Linguatula*)

7. Protozoology

(Kingdom- Protista, Sub kingdom-Protozoa, Phylum 1. Sarcomastigophora, Phylum 2. Apicomplexa, Phylum 3. Microspora, and Phylum 4. Ciliophora).

Morphology, lifecycle, pathogenesis, symptoms, diagnosis, treatment, prevention of the following veterinary important protozoan parasites.

7.1 Phylum 1. Sarcomastigophora,

7.1.1 Sub Phylum-1 Sarcodina, (Family 1. Endamoebidae e.g., *Entamoeba*, *Endolimax*, *Iodamoeba*, *Dientamoeba*, Family 2. Vahlkampfidae e.g., *Naegleria*, Family 3. Hartmannellidae e.g., *Hartmannella*, *Acanthamoeba*)

7.1.2 Sub Phylum-2 Mastigophora, Order 1. Rhizomastigida (Family 1.

Trypanosomatidae e.g., *Trypanosoma*, *Leishmania*), Order 2.

Trichomonadida (Family 1. Trichomonadidae e.g., *Tritrichomonas*, *Trichomonas*, *Tetratrichomonas*, *Pentatrichomonas*. Family 2.

Monocercomonadidae e.g., *Histomonas*, Family 3. Hexamitidae e.g., *Hexamita*, *Giardia*).

7.2 Phylum 2. Apicomplexa, Class Sporozoea,

Sub Class 1. Coccidia

Order 1. Eucoccidiidae,

Sub Order 1. Eimeriina (Family 1. Eimeriidae e.g., *Eimeria*, *Isospora*, Family 2.

Sarcocystidae, Sub family 1. Sarcocystinae e.g., *Sarcocystis*, Sub family 2.

Toxoplasmatinae e.g., *Toxoplasma*, *Besnoitia*, *Hammondia*, *Cystospora*,

Family 3. Haemogregarinidae e.g., *Hepatozoon*)

Sub Order 2. Haemosporina (Family 1. Plasmodiidae e.g., *Plasmodium*, *Haemoproteus*, *Leucocytozoon*).

Sub Class 2. Piroplasmia, Order Piroplasmida (Family 1. Babesidae e.g., *Babesia*, Family 2. Theileriidae e.g., *Theileria*)

7.3 Phylum 3. Microspora, Class Microsporea e.g., *Nosema*,

7.4 Phylum 4. Ciliophora, Class Kinetofragminophorea e.g., *Balantidium*, *Bouxtonella*
Order Rickettsiales e.g., *Anaplasma*

8. Technique in Parasitology:

- 8.1 Methods of collection, fixation, preservation and preparation permanent slides of important helminth parasites, acanthocephala, annelids parasites, arthropods parasites and protozoan parasites of animals and birds.
- 8.2 Fecal collection, preservation, qualitative and quantitative methods of faecal examination for different parasites, their eggs, cysts, oocysts, larva, trophozoites, body segments and adult parasites.
- 8.3 Fecal culture methods for the identification of larval stages of parasites.
- 8.4 Collection, preservation and preparation of thin and thick blood smear and their staining methods of different stains for detection and identification of different parasites.
- 8.5 Estimation of herbage infective larvae, the herbage sampling method 'W' shaped route across pasture described by Taylor (1939).