Common Parasites Of Cattle And Their Chemotherapy

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Abstract

Milk is the complete food. It is produced by lactating animals. It is the basic source of nutrition for young ones. It contains calcium, protein, lactose, saturated fat and enzyme lactase. It is collected from farm animals, mostly cattle, on a dairy. In whole world, the dairy industry is affected by the parasites of cattle. The parasites present within the body, endoparasite and on the body, ectoparasite. They suck the blood of cattle So that they are anemic and milk production is decrease. Now days, the population of India is increasing rapidly. So, need of milk is also increasing. But due to parasite infestation it is decease. Hence, treatment of parasite is necessary. Considering all these fact, present manuscript explores the parasite of cattle with their medicine treatment. So, the dairy farmers follow this manuscript to increase the milk production of cattle.

Key words: Parasites, cattle, endoparasite, ectoparasite, chemotherapy

Introduction

The cattle parasites are of two types. The parasite is within the body, internal parasites and on the surface of body external parasites. Both the parasites are fatal to cattle. They suck the blood of cattle so, they become anemic and production of milk is decrease. They treated with drugs or chemicals. Some chemicals are harmful and some are less harmful. Dairy farmers are not known that which chemical is used for internal parasite and for external parasites. Hence, this manuscript is very helpful for the dairy farmers. Moreover, it explores the nature of parasites with seasons. Considering all these fact, present manuscript explores the parasite of cattle with their medicine treatment. So, the dairy farmers follow this manuscript to increase the milk production of cattle [9].

Materials and methods

2.1 Internal parasites

***Hairworms*:** The gastrointestinal tract of cattle is often infected with hairworms, also called stomach worms and intestinal worms. These worms are transmitted when: 1. Infected cattle pass eggs in manure onto the ground; 2. Eggs hatch in the manure; 3. Rain washes the larvae from the manure; and 4. Cattle swallow larvae on wet grass in moderate temperatures. The worms mature in about 3 weeks and lay eggs. In June, July and August, larval development of the brown stomach worm, the most common and harmful of the hairworms, is inhibited in the stomach lining. The worms are usually transmitted when soil temperatures are 55°F to 85°F in rainy periods in spring (April through June) and fall (October). Pasture larvae hibernate in winter (November through March) and die from heat, sunlight, drying and nutrient depletion in summer (July through September). Normally the disease (wormy cattle) is secondary to inadequate nutrition. Poor nutritional management practices such as over crowdedness and overgrazing create inadequate nutrition and allow cattle to be reinfected continuously. Under these conditions, the cattle's gastrointestinal tracts are a suitable environment for worms to establish; their immune response is low, allowing establishment; and being in poor condition, the wormy cattle cannot withstand effects of the worms [12]. The primary malnutrition condition, a protein deficiency, worsens because the larvae interfere with digestion, causing diarrhea and reducing the appetite. Calves have low immunity and usually become wormy during their exposures. Heavy exposures cause disease; light exposures produce immunity [7].

Adult cattle and young cattle have immunity from previous exposures, but often become wormy when: Nutrition is inadequate and their immunity has lowered; Brown stomach worm larvae have emerged from the stomach lining in September; and Heavy exposures have occurred. Clinical signs of wormy cattle include pale mucous membranes, bottle jaw, pot belly, diarrhea, drawed, not grazing, not chewing cud,

rough and dry hair coat, thinness, weakness and inability to stand. These signs are similar to those caused by malnutrition and liver flukes. The most important way to control hairworms is to maintain good nutrition by: Rotating pastures; preventing overcrowding and overgrazing; and Providing good quality pasture, hay and supplements. When cattle have a diet with enough protein, vitamins and minerals, fewer worms are normally established and the cattle are more able to withstand their effects. Management practices that maintain good nutrition also prevent severe re-infection of worms. Additional control measures include proper drainage and sanitation, separating age groups and strategic worming [2].

Lung worms: Lung worms cause a lung disease in cattle with clinical signs similar to those caused by viruses, bacteria and allergies. Transmission and control are the same as for hairworms. Lung worm disease occurs in previously unexposed cattle, such as in calves or moved cattle [3].

Liver flukes: Cattle living in wet areas with alkaline soils may develop liver fluke infections. Liver flukes are transmitted when: 1. Infected cattle, deer and rabbits pass eggs in manure and drop the manure in water; 2. Eggs hatch in water and larvae develop in snails; and 3. Cattle swallow cysts on grass or hay. Clinical signs of digestive inefficiency are evident in young cattle with acute liver disease and in older cattle with chronic liver disease. Fluky cattle show signs similar to those with malnutrition and hairworms. Strategic worming Wormers are administered to cattle not only as a treatment to kill internal parasites and to stop damage caused by parasites, but also to prevent pasture contamination and reinfection of the cattle[6]. Strategically administering drugs reduces environmental contamination and infection of cattle and snails. A strategic method requires proper timing. This means that a drug against a parasite must be administered at the right time considering the parasite's biology. Therefore, the correct time is not when the cattle are confined and accessible, or because it has been a long time since the cattle received a drug, or because administrations are spaced evenly (fall and spring, every 6 months). The correct time is when cattle have become infected, the parasite is beginning to develop and cause damage, and conditions are best for transmission. Administering a drug at the right time breaks the life cycle of the worms and prevents them from building up in cattle [12]. The right time to administer cattle wormers normally depends on the parasite and the development of optimal environmental conditions, which include moderate temperatures, rainfall and wet grass. For stomach worms, administer drugs 3 to 6 weeks after optimal environmental conditions develop. For liver flukes, administer drugs 4 to 6 months after optimal conditions are present. Examine feces each month to check fluctuations of worm eggs per gram of feces, which will help you, time the drug administration properly and monitor the effectiveness of your control measures. Drugs to control internal parasites should supplement but not replace management practices to improve sanitation and nutrition. Table-1 shows what products can be used for various parasites and how to administer them [4].

Coccidia: Coccidia cause an intestinal disease of young cattle, usually 3 weeks to 6 months old, but can affect cattle up to 2 years old. They are transmitted when: 1. Infected cattle pass cysts in manure onto the ground; 2. Rain washes the cysts from the manure; 3. The cysts develop under moist and moderate temperature conditions; and 4. Cattle swallow cysts on moist ground. As with hairworms and lung worms, transmission is common during rainy times in spring and fall. The diarrhea caused by coccidia may be confused with the diarrhea caused by hairworms, bacteria and viruses. Workers are ineffective against coccidia. Effective drugs are amprolium (Amprol, Corid), decoquinate (Deccox), lasalocid (Bovatec), and sulfonamides. After 1 week of optimal conditions, administer the drug in feed or water for 2 weeks to calves maintained in a manure-contaminated environment, such as haying and feeding areas. Control measures include the management practices for hairworms [5].

2.2 External parasites

Horn flies: Horn flies reproduce in fresh cattle manure from early spring to late fall. Horn fly populations usually peak in late spring and again in late summer or early fall. Hot, dry conditions may naturally reduce horn fly numbers during mid-summer. Thousands of flies may infest a single animal, causing extreme nervousness and energy loss. Horn flies suck blood, irritate and annoy, reduce weight gains and cause weight losses. The annoyance and irritation interfere with cattle's feeding and resting. Treatment is economically justified when horn fly populations reach 250 per head. To control them satisfactory orally throughout the season, use self-treatment insecticides or routinely apply spray, pour-on, spot-on or dust chemicals. Used properly, self-treatment devices are more effective than hand application in controlling horn flies and lice. Such devices include oil back rubbers, dust bags and tubes, liquid wicks and impregnated ear tags. Insecticide-impregnated ear tags control horn flies well for 2 to 5 months if they are properly attached to the ear and if pyrethroid resistance is not a factor. Currently labeled ear tags contain a pyrethroid, an organo-phosphate or a pyrethroid/organophosphate/synergist mixture. Pyrethroid ear tags (permethrin, fenvalerate) have induced widespread horn fly resistance. Vary the types of ear tag insecticides rather than using the same kind year after year. Remove tags as soon as possible once they

have lost their effectiveness in killing horn flies. Tags used 4 to 5 months emit too little insecticide to control fly populations adequately. Tags emitting reduced doses seem to add to the resistance problem by prolonging fly exposure, thus making the surviving population more resistant to the insecticide [11].

Lice: Biting lice and blood-sucking lice are transmitted between cattle by contact, especially in the fall, winter and spring when egg production increases in cool weather. Because cattle tend to bunch up more in cold weather, uncontrolled lice spread easily from animal to animal and quickly infest an entire herd. Lice cause a condition called lousy, an itching skin disease with possible anemia. Clinical signs are dry, scaly skin, hair loss and itching exhibited by biting, rubbing and scratching. Lice bites and allergies to lice cause the itching. The allergic dermatitis may persist after the lice are gone. These signs may be confused with malnutrition and allergies caused by horn flies, mosquitoes and gnats. Although chemicals do not harm lice eggs, cattle can be treated effectively by administering insecticides twice at a 2-week interval or once with avermectins (Ivomec, Eprinex, Dectomax) or milbemycin (Cydectin). Use spray, dust, pour-on, spot-on, injection or self treatment methods in fall and winter for control. Injection does not work for biting lice [13].

Grubs: Cattle grubs (warbles, wolves) are larvae of heel flies, which lay eggs on hairs of the lower legs of cattle in late winter and spring. Grubs appear in the backs of cattle in winter. The migratory damage by the grubs in cattle causes weight losses and reduces weight gains and milk production. To control grubs, administer systemic organophosphate insecticides (CoRal, Warbex, Spotton, Neguvon, Tiguvon, Prolate), avermectins (Ivomec, Eprinex, Dectomax) or milbemycin (Cydectin) to cattle no later than 3 months before grubs appear in the back. Use pour-on, spot-on, spray or injection methods to kill migrating grubs before they reach the esophagus. If cattle are not treated for cattle grubs in the summer, the systemic organophosphate insecticides and avermectins used in the fall and winter for control of lice, horn flies, and worms may cause reactions in the esophagus if many grubs are present.

Ticks: Ticks are parasitic arachnids of the order Ixodida. They are part of the mite super order Parasitiformes. Adult ticks are approximately 3 to 5 mm in length depending on age, sex, and species, but can become larger when engorged. Ticks are external parasites, living by feeding on the blood of mammals, birds, and sometimes reptiles and amphibians. The timing of the origin of ticks is uncertain, though the oldest known tick fossils are around 100 million years old, and come from the Cretaceous period. Ticks are widely distributed around the world, especially in warm, humid climates.

Ticks are extremely resilient animals. They can survive in a near vacuum for as long as half an hour. Their slow metabolism during their dormant periods enables them to go prolonged durations between meals. Even after 18 weeks of starvation, they can endure repeated two-day bouts of dehydration followed by rehydration, but their survivability against dehydration drops rapidly after 36 weeks of starvation. To keep from dehydrating, ticks hide in humid spots on the forest floor or absorb water from sub-saturated air by secreting hygroscopic fluid produced by the salivary glands onto the external mouthparts and then re-ingesting the water-enriched fluid. Ticks can transmit many kinds of pathogens, such as bacteria, viruses, and protozoa that infect ticks' hosts. A tick can harbor more than one type of pathogen, making diagnosis more difficult. Species of the bacterial genus *Rickettsia* are responsible for typhus, rickettsial pox, boutonneuse fever, African tick bite fever, Rocky Mountain spotted fever, Flinders Island spotted fever, and Queensland tick typhus (Australian tick typhus). Other tick-borne diseases include Lyme disease and Q fever, Colorado tick fever, Crimean–Congo hemorrhagic fever, tularemia, tick-borne relapsing fever, babesiosis, ehrlichiosis, Bourbon virus and tick-borne meningo encephalitis, as well as bovine anaplasmosis and the Heartland virus. In the United States, Lyme disease is the most commonly reported vector-borne disease in the country [10].

Mites: Mites are small arachnids (eight-legged arthropods) of two large orders, the Acariformes and the Parasitiformes, which were historically grouped together in the sub-class Acari. However, most recent genetic analyses do not recover the two as each other's closest relative within Arachnida, rendering the group invalid as a clade. Most mites are tiny, less than 1 mm (0.04 in) in length, and have a simple, unsegmented body plan. The small size of most species makes them easily overlooked; some species live in water, many live in soil as decomposers, others live on plants, sometimes creating galls, while others are predators or parasites. This last type includes the commercially destructive *Varroa* parasite of honey bees, as well as scabies mites of humans. Most species are harmless to humans, but a few are associated with allergies or may transmit diseases. The scientific discipline devoted to the study of mites is called acarology [1].

The majority of mite species are harmless to humans and domestic animals, but a few species can colonize mammals directly, acting as vectors for disease transmission, and causing or contributing to allergenic diseases. Mites which colonize human skin are the cause of several types of itchy skin rashes,

such as gamasoidosis rodent mite dermatitis, grain itch, grocer's itch, and scabies; *Sarcoptes scabiei* is a parasitic mite responsible for scabies, which is one of the three most common skin disorders in children. *Demodex* mites, a common cause of mange in dogs and other domesticated animals, have also been implicated in the human skin disease rosacea; although the mechanism by which *demodex* contributes to the disease is unclear. Ticks are well known for carrying diseases, such as Lyme disease and Rocky Mountain spotted fever. Chiggers are known primarily for their itchy bite, but they can also spread disease in some limited circumstances, such as scrub typhus. The house-mouse mite is the only known vector of the disease rickettsial pox. House dust mites, found in warm and humid places such as beds, because several forms of allergic diseases, including hay fever, asthma and eczema, and are known to aggravate atopic dermatitis. Among domestic animals, sheep are affected by the mite *Psoroptes ovis* which lives on the skin, causing hypersensitivity and inflammation. Hay mites are a suspected reservoir for scrapie, a prion disease of sheep [8].

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Table -1 Drugs and their action

S.N.	Drug (Product name)	Parasites treated	Methods
1.	Levamisole (Levasole , Tramisol , Totalon)	Stomach worms , lung worms	Drench, injection , pour-on, bolus, feed, block
2.	Fenbendazole (Safe-Guard)	Stomach worms , lung worms , tapeworms	Drench, paste, feed, block
3.	Oxfendazole (Synanthic)	Stomach worms , lung worms , tapeworms	Drench, paste, injection
4.	Albendazole (Valbazen)	Stomach worms , lung worms , common liver fluke, tape worm	Drench, paste
5.	Moxidectin (Cydectin)	Stomach worms , lung worms , grubs, sucking lice, mange mites, biting lice, horn flies	Pour-on
6.	Eprinomectin (Eprinex)	Stomach worms , lung worms , grubs, sucking lice, mange mites, biting lice, horn flies	Pour-on
7.	Doramectin (Dectomax)	Stomach worms , lung worms , grubs, sucking lice, mange mites, biting lice	Injection , pour-on
8.	Ivermectin (Ivomec)	Stomach worms , lung worms , grubs, sucking lice,	Injection , pour-on, bolus
9.	Ivermectin + Clorsulon (Ivomec Plus)	Stomach worms , lung worms , grubs, sucking lice, mange mites, common liver fluke	Injection
10.	Clorsulon (Curatrem)	Common liver fluke	Drench