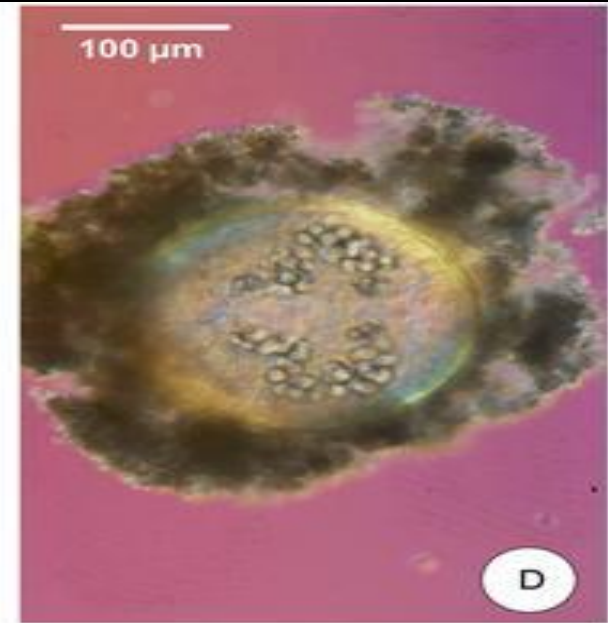
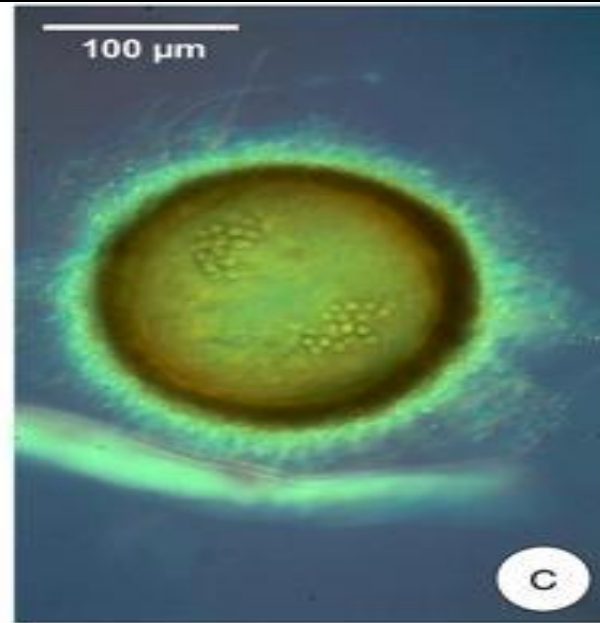
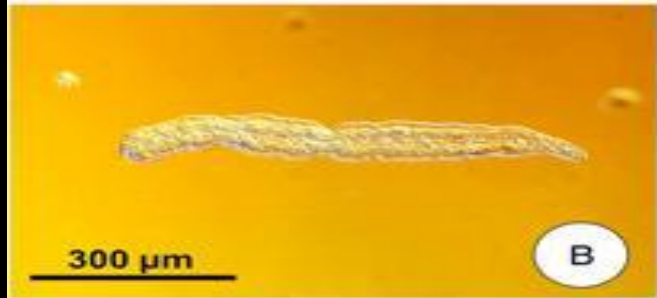


# TROPIC NO: 4

- FASCIOLA HEPATICA





# SYSTEMATIC POSITION

- KINGDOM : ANIMALIA
- PHYLUM : PLATYHELMINTHES
- CLASS : TREMATODA
- ORDER : ECHINOSTOMIDA
- FAMILY : Fasciolidae
- GENUS : Fasciola
- SPECIES : F. HEPATICA

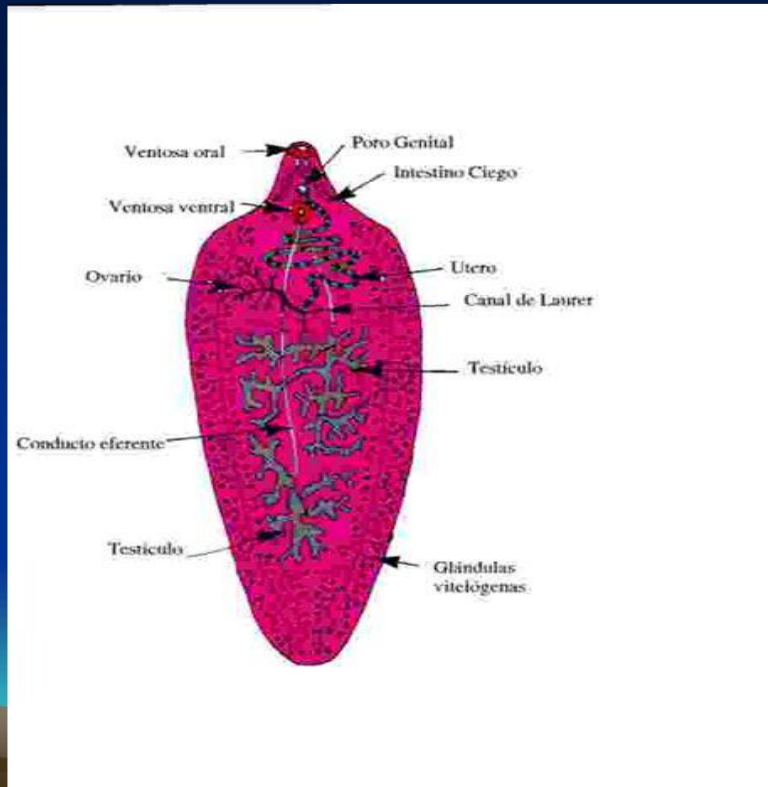


# MORPHOLOGY

- Morphology: The Adult Worm - Averaging 30mm in length and 13 mm in width, *Fasciola hepatica* is one of the largest flukes in the world. The adult worm has a very characteristic leaf shape with the anterior end being broader than the posterior end and an anterior cone-shaped projection.

## *Fasciola hepatica*

- Morphology:
- - Size: **adult fluke measures 20-30 \* 8-13mm** wide and is flat and leaf like, with a spiny tegument.



# GEOGRAPHICAL DISTRIBUTION

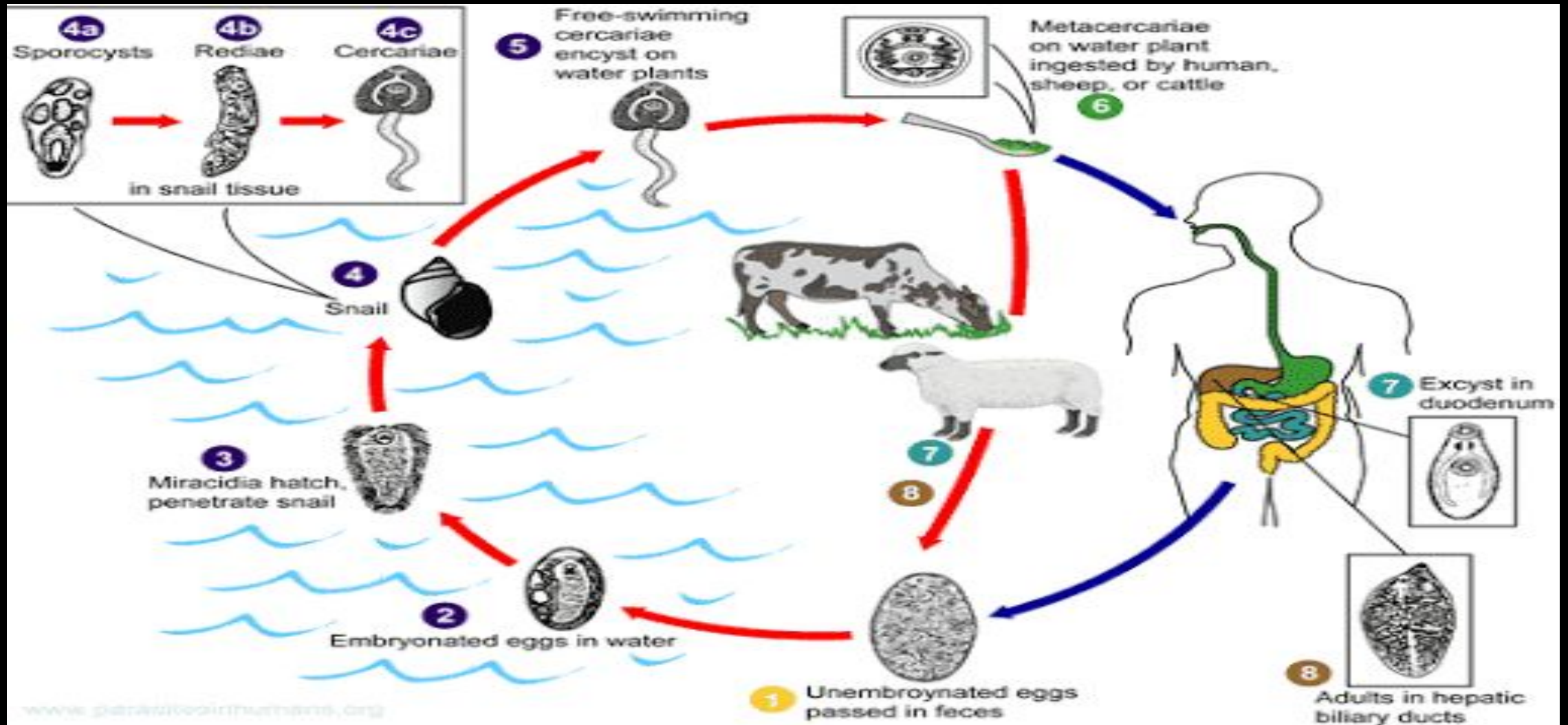
- Fasciola hepatica is found on all inhabited continents, in more than 70 countries, particularly where sheep or cattle are raised. Human infections have been reported in parts of Europe, the Middle East, Latin America (e.g., Bolivia and Peru), the Caribbean, Asia, Africa, and rarely in Australia. 2 мая 2019 г

## Geographical Distribution

- Found in Rural areas of temperate and tropical regions
- Especially located in regions with cattle and sheep herding
- Found on every continent with nearly 180 million people at risk and an estimated 2.4 million people already infected worldwide.



# LIFE CYCLE



# PATHOGENICITY

- Pathogenesis: Infections have been associated with two types of liver disease in domestic animals: acute or subacute necrotic disease due to juvenile flukes; and chronic fibrotic disease due to adult flukes. Penetration of the liver capsule by immature flukes generally does not cause much damage, but their subsequent migration through the liver parenchyma may cause significant necrosis (liver rot). Mass migration of juveniles may produce extensive traumatic tissue damage, coagulative necrosis, haemorrhage, urticaria, eosinophilia, leukocytosis, pallor, anaemia, and can be fatal. Acute infections in sheep can also be complicated by secondary bacterial infection causing clostridial necrotic hepatitis ('black disease'). Chronic infections by the long-lived adults feeding on the lining of the bile ducts may result in progressive loss of condition, biliary epithelial hyperplasia, duct fibrosis, biliary obstruction and cholangitis, jaundice, and eventually a fibrotic hardened liver. Sheep may become anaemic and emaciated, developing submandibular oedema (bottle-jaw) and ascites.

# MODE OF TRANSMISSION

- Digenean trematodes have indirect life-cycles, involving mammalian definitive hosts and molluscan intermediate hosts. Transmission between the two hosts occurs within water, via the formation of motile and encysted larval stages. Adult flukes produce numerous eggs (up to 300 per day) which are shed in host faeces. The eggs embryonate in water in a few days to form miracidia, which hatch out in 9-10 days in warm weather (longer when colder). Miracidia actively seek snail hosts by chemotaxis, and must penetrate snail tissues within a few hours or die after 24 hours. *F. hepatica* exhibits high intermediate host-specificity and will only develop in freshwater amphibious lymnaeid snails. These snails are pulmonate (with lungs), small (0.5-2.5cm long) and delicate; their shells being thin, fragile, lacking an operculum and the apertures located on the right-hand side (dextral). They live in freshwater and/or wet soils and survive dry periods by burrowing and aestivating. Various *Lymnaea* spp. are suitable intermediate hosts; the most common being *L. (Galba) truncatula*.



# DISEASE AND DIALYSIS

- fasciolosis is a parasitic worm infection caused by the common liver fluke *Fasciola hepatica* as well as by *Fasciola gigantica*. The disease is a plant-borne trematode zoonosis, and is classified as a neglected tropical disease (NTD). It affects humans, but its main host is ruminants such as cattle and sheep.

## SYMPTOMS

- Abdominal Pain
- Anemia
- Hepatic Tenderness
- Hepatomegaly resulting from Edema
- Intermittent Fever
- Jaundice
- Lethargy
- Nausea
- Prolonged High Fever
- Secondary Infections
- Vomiting

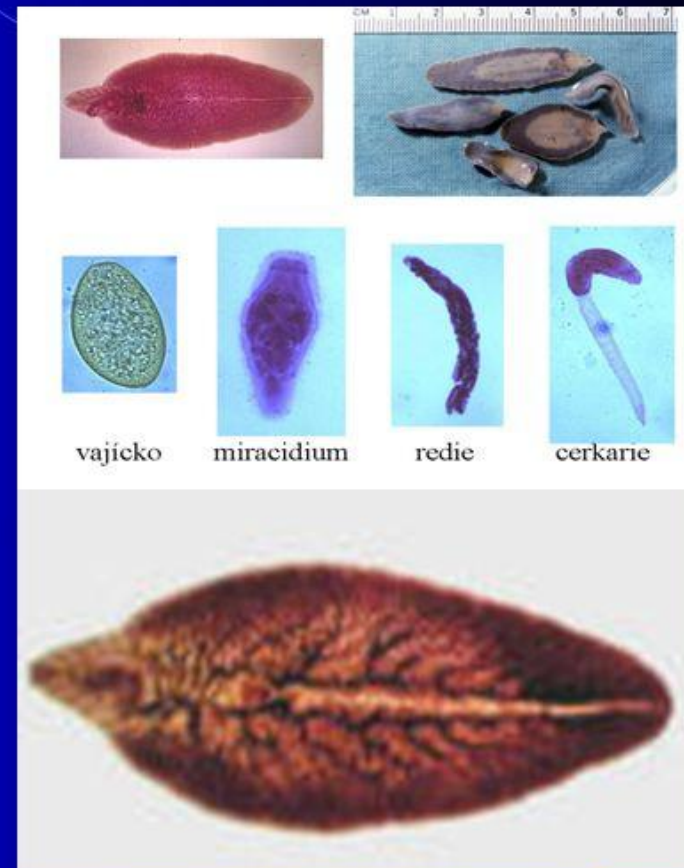


# PREVENTION AND CONTROL

- : Subacute and chronic infections may be treated with triclabendazole or bithionol, which show excellent trematocidal activity with few side-effects. A range of other anthelmintics show variable activity, including carbon tetrachloride, rafoxanide, niclofolan, closantel and oxyclozanide, but their use may be contra-indicated under certain conditions in certain animals. Preventive measures are based on breaking the cycle of transmission by reducing faecal contamination of water bodies, reducing snail populations using molluscicides (usually copper sulphate) or draining swampy fields, restricting access of livestock to aquatic vegetation, and avoiding watercress. Snail control is often difficult, particularly in high rainfall areas where even temporary pools may harbour large snail populations (they aestivate in the ground during dry conditions). Feral or wild animals (such as rabbits) may also continue to act as reservoirs of infection for domestic livestock.

# FASCIOLA HEPATICA

- **CLINICAL DISEASE:** Parasites obstruct bile ducts and lay eggs within them, leading to cholelithiasis (gallstones). Biliary obstruction can occur, sometimes causing biliary cirrhosis.
- **DIAGNOSIS:** immature eggs in feces. An egg has large sizes, thin membrane, yellow color and small cover in one pole.
- **PREVENTION:** involves not eating wild aquatic vegetables.



# Laboratory Diagnosis

- Microscopic identification of eggs, or more rarely of the adult flukes, in the stool or vomitus is the basis of specific diagnosis.
- The eggs are indistinguishable from those of *Fasciola hepatica*







THANK YOU  
BY  
JAYASANKAR JAYASRI