

FASCIOLA HEPATICA (contd.)

Life cycle and development:

① Digenetic life cycle: Life cycle of *F. hepatica* is complex and completed in two hosts. Primary host, in which the adult fluke lives, is sheep. While the intermediate host, in which numerous larval stages are passed, is a snail (*Lymnaea*, *Planorbis* etc). This type of life cycle, involving two different kinds of hosts, is termed digenetic.

② Copulation: Self-fertilization is of rare occurrence in liver flukes though they are hermaphrodite. Cross-fertilization preceded by copulation is of normal occurrence. In *F. hepatica*, copulation takes place in bile ducts of the host.

③ Fertilization: Fertilization is internal. In cross-fertilization sperms received in Laurer's canal during copulation, enter the distal end of oviduct where fertilization occurs. During self-fertilization, sperms enter the uterus of same fluke through female genital aperture and pass down to fertilize the eggs.

(IV) Capsule formation: Each fertilized egg or zygote is surrounded by yolk cells, which provide yolk and shell material. Shell-globules of yolk cells contain proteins and a phenol. According to Stephenson (1947), phenol is oxidized to a quinone in the proximal part of uterus. Quinone then tans the protein, producing a hard, resistant and leathery sclerotin like that of insects. This sclerotin forms the shell around fertilized eggs. Above finding of Stephenson in liver flukes is perhaps true for all Platyhelminths.

(V) Capsule: Shelled eggs are termed capsule or simply eggs. A shell or capsule is yellow or brown, in colour and oval in shape. It is about 100 to 150  $\mu$  long and 60 to 90  $\mu$  wide. It is operculate, i.e. provided with a lid or operculum. Situated immediately beneath the operculum, at the terminal end of egg is a viscous and granular cushion. About 3,000 or more such capsule may occur at a time in the uterus of a single fluke. There may be as many as 200 flukes in the liver of one sheep. If such fluke produces 500,000 eggs (in 10 years), a single infected sheep may disperse 100 million fertile eggs. This vast capacity for egg production is necessary in view of the complicated life cycle and slim chances of survival. Fig: