

H I S T O R I C A L R E V I E W

Fasciola gigantica was first described by Cobbold (1855) from the liver of Giraffa camelopardalis and was subsequently referred to as Cladocoelium giganteum by Stossich (1892). Jackson (1921) reviewed the various species and gave a comprehensive account of the gross morphology of various forms. Varma (1953) also studied this parasite and described an identical form from the liver of goat and buffaloes and named it as Fasciola indica but Sarwar (1957) ultimately regarded it as a synonym of F. gigantica and this view is now widely held.

Thapar and Tandon (1952) elucidated the life-history of this parasite at Lucknow, India, and found Lymnaea acuminata and L. auricularia as the common intermediate hosts. In recent years Patnaik (1971) furnished a comprehensive account of the autecology and synecology of this parasite as well as its intermediate hosts in Orissa.

Inspite of wide distribution in tropics and subtropics, little work seems to have been done on its morphology. Except a few morphological studies like those of Bhalerao (1935), Watanabe and Iwata (1956 & 1958), Watanabe and Ueno (1959, & 1960 a,b), Rao and Madhavi (1962) and Shyamasundari & Rao (1975) on the anatomical features of its larval forms and few

morphological aspects, extensive studies on the morphology of F. gigantica are still wanting. Most of the studies are either epizootological, ecological or empirical and quantitative or related to it's chemotherapy.

F. hepatica, being the commonest and most abundantly available fluke, attracted attention of several workers and became an ideal tool and model of trematode morphology and physiology. Pioneer studies by early workers in this regard are those of Leuckart (1881 & 1886), Thomas (1881, 1882 & 1883 a,b) and Bettendorf (1897). Weinland and von Brand (1926) first set pace on histochemical and physiological aspects and elucidated the localization of glycogen in such parasites. von Brand & Mercado (1961) elaborated such studies and these were followed by Pantelouris (1964) and Halton (1967 a,b).

On F. gigantica preliminary physiological studies have been made by Goil (1958a,b & 1961) on carbohydrate, protein and lipid metabolism, and in recent years notable contribution have been made by Siddiqi & Lutz (1966) on it's ionic and osmotic regulation, and Lutz & Siddiqi (1967) on the nature of haemoglobin of this parasite vis-a-vis the same moiety of it's host.

Compared to F. gigantica, much work has been done on it's closest congener, F. hepatica and has formed the basis of generalization of trematode morphology and, in certain respects, trematode physiology, notable among these being

the studies of Prenant (1922), Muller (1923), Bugge (1929), Stephenson (1947a,b,c & d), Alvarado (1951) and Dawes (1954, 1962 & 1963a).

The advent of electron microscopy, and more recently that of scanning electron microscopy have opened new vistas in morphology and many workers utilized these tools in studying various aspects of morphology, and, among other structures, tegument and parenchyma first attracted attention of such workers, most significant among these being those of Senft (1959), Threadgold (1963 a,b), Threadgold & Gallagher (1966), Tay & Biagi (1968), Bennett (1975a,c) and Bennett & Threadgold (1975) on F. hepatica. Although no such study has so far been made on F. gigantica there appears no possibility that at it's ultrastructural level would there be any specific deviation from the generalized pattern of F. hepatica.

The liver-flukes were generally believed to feed on the bile contents of the liver and gall bladder and the much ramified caeca and multiple branched digestive system does provide sufficient testimony in this regard but, based on the findings of Stephenson (1947b), Gresson & Threadgold (1959), and his own, Dawes (1962, & 1963 a,c) furnished conclusive evidence that F. hepatica feeds on the hepatic tissue of it's host as well.

Among other notable contributions on various trematode systems relating liver-flukes are those of Lang (1880), Sommer (1880), and Bettendorf (1897) on it's generalized pattern of nervous system, Bugge (1929), Kawana (1940) and Pantelouris & Threadgold (1963) on the excretory system, and Shyamasundari & Rao (1975) on the neurosecretory cells of F. hepatica and E. gigantica. These are substantiated by the histochemical studies of Weinland and von Brand (1926), Monne' (1959), von Brand & Mercado (1961), Bjorkman et al. (1963), Pantelousis (1964), Threadgold and Gallagher (1966) and Halton (1967 a,b). However, no such studies have been made on F. gigantica.

The reproductive system, particularly the Mehlis' gland complex, cytology of gonads, spermatogenesis, oogenesis, germ cell cycle, and mechanism of egg shell formation have been subjected to elaborate studies by various investigators, notable among these are the contributions of Gresson (1957), and Yosufzai (1952a & 1953a) on germ cell cycles, spermatogenesis and oogenesis in F. hepatica and of Smyth (1951), Yosufzai, (1953b) and Rao (1959a,b & 1960) on egg shell formation. However, the only study on this aspect in F. gigantica is that of Rao & Madhavi (1962) on the Mehlis' gland complex.