SUMMARY
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Studies on *Dorylaimus stagnalis* Dujardin, 1845 presented in this thesis include observations on the morphology, anatomy, variation, developmental biology, effect of chemicals and predatory behaviour.

Observations on the morphology revealed variations in the total body length, size of spear, position of guiding ring, position of vulva, length of anterior and posterior gonads, prerectum and tail. Females are larger than the males and also have larger odontostyles. In both the sexes the length of odontophore is greater than the odontostyle. Adults have 32-34, first stage 21-22, second 23-24, third 25-26 and fourth 27-29 longitudinal ridges on the body. A cross-section of the mid-body shows two large lateral chords and the comparatively smaller dorsal and ventral chords. In the anterior region, however, the size of all the four chords are equal and somewhat T-shaped. Somatic muscle cells in the interchordal zones of hypodermis are typically coelomyarian with polymyarian arrangement (5-9 cells in each quadrant). The size, shape and number of these cells vary in different body regions of adults and juveniles.

Of the various specialized muscles, those associated with the feeding apparatus are the protractor and retractor muscles. In the vulval region are the dilatator and
constrictor vulvae. The oviduct - uterus junction has weak sphincter muscles. Males are provided with caudal copulatory and spicular muscles. Males possess 2 bands of anal muscles while female have only one band which runs from ventral to subdorsal wall of body.

The digestive system consists of a feeding apparatus (odontostyle and odontophore), oesophagus, cardia, intestine, prerectum, rectum and anus. The lumen of oesophagus is triradiate. Intestine is made up of single layer of cells, and is 10-13 cells in circumference. The length of prerectum is more in males than females and made up of 9-11 cells. Males have 2-3 rectal glands. The females are amphidelphic and each sexual branch consists of a reflexed ovary, an oviduct and a long flexible uterus. The males are diorchic, testis is followed by a vas deferens, an ejaculatory duct which joins the cloaca. There are 3 pairs of ejaculatory glands. The secondary sexual characters include paired spicules, lateral guiding pieces and supplements. Females have long filiform tails while male tails are short conoid.

An analysis of morphometric and allometric characters of adults and juveniles revealed that these characters may vary to different degrees. The lengths of odontostyle, odontophore, position of vulva, lip width, lip height, length of expanded part of oesophagus and number of supplements showed the least variation. The
ratio 'a' (in males), 'b', v' and T are also least variable characters in adults and juveniles.

The juveniles could be differentiated from adults on the basis of their body length and in having 2 odontostyles (the functional and replacement odontostyles). Amongst themselves, the four juvenile stages were distinguished by their functional and replacement odontostyles lengths, length of germinal primordia and the number of germinal nuclei present in the primordia.

Life cycle (egg-egg) was completed in 117-138 days. Embryogenesis lasted for 45-83 hrs after which the first stage juvenile hatched. Developmental stages (1st, 2nd, 3rd and 4th) were typically characterised by the presence of replacement odontostyle and incompletely developed gonads. The odontostyle developed from the single cell present in the anterior slender part of oesophagus and migrated through the odontophore to take the place of functional odontostyle during moulting. The germinal primordium in the first stage is oval and made up of 2 germinal and 4-6 somatic nuclei. During the succeeding developmental stages, proliferation of germ cells occurs and the gonad is completely formed by the time the fourth stage juveniles moult into adults. The sexes can be differentiated at third stage. Normally males mature earlier than females.
The chemicals tested were toxic for adults and juveniles. Sodium chloride and Furadon were least toxic in comparison with potassium chloride, potassium iodide, urea, ammonia and temik which were highly toxic.

Observations on the predatory behaviour of *D. stagnalis* were made in agar plates. *Rhabditis* sp. was preferred most while *Acrobeloides* sp., *Tylenchorhynchus mashhoodi* and *Helicotylenchus indicus* the least. Adults preyed more than their younger stages. All factors viz., prey number, temperature and agar concentrations influenced predation by *D. stagnalis* except the starvation of predators. Maximum predation took place when predators were placed in a population of 125 individuals of prey. Agar concentrations 1, 2 and 3% and temperatures 25°C and 30°C were most suitable for predation by *D. stagnalis*. 