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EFFECT OF AGAR CONCENTRATION ON MATRICIDAL HATCHING IN *CRUZNEMA TRIPARTITUM*

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Summary. Matricidal hatching was observed in well fed amphimictic females of *Cruznema tripartitum*. Tests using different concentrations of agar (0.5%, 1%, 1.5%, 2% and 3%) showed that 1.5% was most suitable for matricidal as well as for the normal hatching and also for the number of juveniles hatched in both cases. Development up to the third juvenile stage within the body was observed in some females.

Intra-uterine egg development takes place because viable eggs are retained within the female. Retention may result from the weakening of uterine muscles due to ageing or excessive egg production. In *Scutellonema cavenessi* (De-meure *et al.*, 1980), *Chiloplacus symmetricus* (Ahmad and Jairajpuri, 1979) and *Teratorhabditis andrassyi* (Tahseen and Jairajpuri, 1988) eggs were retained inside the body up to the four celled stage but they were not viable if retained further. In tylenchids *Aphlenchus avenae* (Jairajpuri, 1964), *Paranguina agropyri* (Krall, 1967) and *Pratylenchus coffeae* (Wehunt and Edward, 1971) juveniles hatched out within the female body as also was observed in rhabditids (Lordello, 1951; Singh and Khera, 1978). Among dorylaims only *Xiphinema* spp. (Jatala, 1975; Jairajpuri and Bajaj, 1978) were found to undergo matricidal hatching. In the present study an attempt has been made to find any direct or indirect effect of agar concentration on the phenomenon of matricidal hatching in *Cruznema tripartitum* (Linstow, 1906) Zullini, 1982.

Material and methods

Soil samples containing populations of *Cruznema tripartitum* were collected from near the AMU campus, Aligarh and were processed by the Bearmann funnel technique. The nematodes were cultured in autoclaved agar cultures of 0.5, 1, 1.5, 2 and 3% concentrations, contained in 5 cm diam. petridishes with the bacterium *Escherechia coli* added as food for the nematodes. Fifteen fourth stage moulting female juveniles and five fourth stage moulting male juveniles were added to each petridish. The dishes

were kept in a growth chamber at 29°C. The experiment was replicated five times and observations were recorded daily.

Results and discussion

Matricidal hatching (Fig. 1) in the different concentrations of agar started on or after the 4th day of inoculation with a peak on the 7th day, except in the 0.5% concentration where it occurred on the 8th day. The maximum hatch of first stage juveniles from a single female was observed on the 6th day in 2% agar whereas in other concentrations a comparatively low but maximum hatch on the 7th day. The highest rate of matricidal hatching/day (48%) was observed in 1.5% while it was lowest in 0.5% agar. Matricidal hatching ceased after the 9th day in 0.5% agar and after the 10th day in the remaining concentrations. However, the maximum number of juveniles, hatched matricidally from a single female at the terminal stage was observed in 3% agar. In 1.5% agar, development up to third stage juveniles was observed within female's body in some cases (Fig. 1).

Agar concentration indirectly affected the rate of matricidal hatching as well as the number of juveniles matricidally hatched. Survival of nematodes as well as instances of matricidal hatching were optimum at 1.5%. It can be speculated that low concentration culture media (i.e. 0.5% and 1%) may be readily contaminated because of greater percentage of water in them. Nematodes survived best in 1.5% agar and at this concentration there was full growth of the genital organs and enhanced egg production.

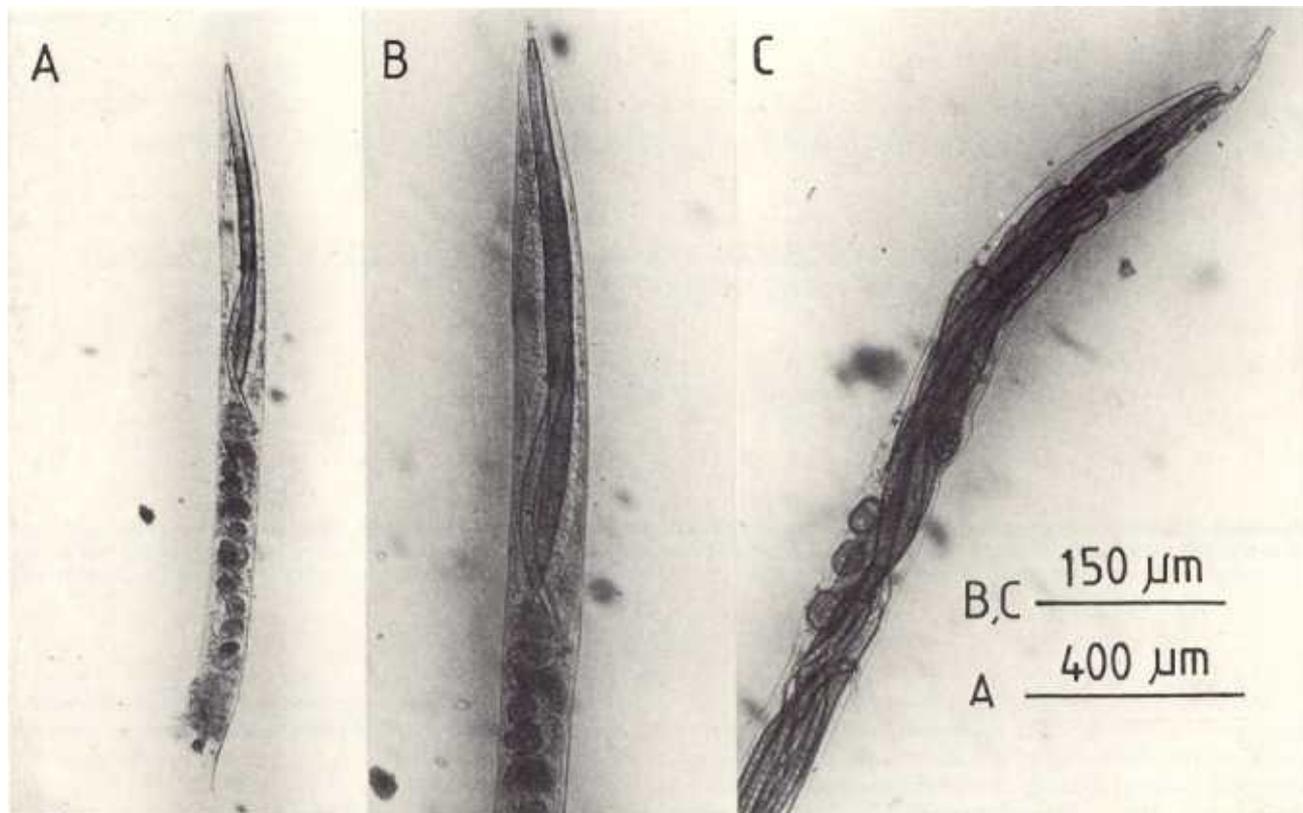


Fig. 1 - Matricidal hatching in females of *Cruznema tripartitum*

Literature cited

- AHMAD I. and JAIRAJPURI M.S., 1979 - Developmental biology of *Chiloplacus symmetricus*. *Indian J. Nematol.*, 7: 123-139.
- DEMEURE Y., NETSCHER C. and QUENÉHERVÉ P., 1980 - Biology of plant-parasitic nematode, *Scutellonema cavenessi* Sher, 1964: reproduction, development and life cycle. *Revue Nématol.*, 3: 213-225.
- JAIRAJPURI M.S., 1964 - Intra-uterine egg development in *Aphelenchus avenae*. *Nematologica*, 10: 183.
- JAIRAJPURI M.S. and BAJAJ H.K., 1978 - Observations on the biology of *Xiphinema basiri* and *X. insigne*. *Revue Nématol.*, 1: 227-239.
- JATALA P., 1975 - *Endotokia matricida* in a *Xiphinema* sp. *J. Nematol.*, 7: 205-206.
- KRALL E., 1967 - Occurrence of *Endotokia matricida* in *Paranguina agropyri* with a note on the hibernation of this eelworm. *Nematologica*, 13: 466.
- LORDELLO L.G.E., 1951 - *Endotoquia matricida* en *Rhabditis* sp. (Nematoda, Rhabditidae) *An. Esc. Super. Agric. «Luiz de Queiroz»*, 8: 111-114.
- SINGH R.V. and KHERA S., 1978 - A case of *endotokia matricida* in *Acrobeloides* sp. *Indian J. Nematol.*, 6: 103-104.
- TAHSEEN Q. and JAIRAJPURI M.S., 1988 - Description and developmental biology of *Teratorhabditis andrassyi* n.sp. (Nematoda: Rhabditida) *Revue Nématol.*, 11: 333-342.
- WEHUNT E.J. and EDWARDS D.L., 1971 - Intra-uterine egg development of *Pratylenchus coffeae* (Zimmermann) Filipjev and Schuurmans Stekhoven. *J. Nematol.*, 3: 422-423.