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PARASITISM OF *HEXAGONIA POLYGRAMMA* MONT. ON *DIOSPYROS EMBRYOPTERIS PERS.*

From the available literatures it reveals that *Hexagonia polygramma* Mont, a common Indian polypore, is known as a saprophyte on logs, posts and stumps of various trees (Anonymous, 1950; Bagchee, 1954; Bagchee *et. al*, 1955; Bakshi, 1971). It has been found that very few fungi are so far been reported as parasite on their respective host. (Bagchee, 1954; Bakshi. 1971; Banerjee, 1957). In the present investigation, it has been found that *H. polygramma* is able to parasitize the host, *Diospyros embryopteris*, through wound when the host tree saplings are inoculated with both the primary and the secondary mycelia of the pathogen

The basidiocarp of *H. polygramma* has been collected from Rajarhat, 24-Parganas, and later from Hooghly district of West Bengal. They have been found to be associated with the fruit tree, *D. embryopteris* Pers.. From these basidiocarps, the primary and the secondary mycelia have been prepared in the usual way and maintained in the 2.5 *per cent malt agar* medium for future studies.

Inoculation experiments have been started with young saplings of *D. embryopteris* in the Botanical garden of University College of Science, Calcutta, in October, 1970.

A large number of young saplings, about one and half years old, have been grown in the garden and eighteen selected saplings have been inoculated both with the primary and the secondary mycelia of the fungus, six with the primary mycelium and six others with the secondary ones. The rest of the healthy saplings of the same age have been kept as control.

At the time of inoculation, the bark of the main stem of each plant has been superficially sterilized as far as possible by wiping the surface first with sterile distilled water and then with 95 *per cent* alcohol. The stem has then been inoculated by making triangular or rectangular cuts open toward the base by a sterile scalpel (Heald, 1937). The flap of the bark has been raised up with the sterile scalpel and the inoculum has been placed under it in contact with living tissue, the phellogen. The raised bark has then been placed in position, covered with moist and sterile absorbent cotton wool, wrapped with a piece of thick sterilized oil paper, and firmly tied with thread at both ends. In case of controls, similar procedure has been followed but without any inoculum. The moist cotton

has been used in order to prevent drying out of both the injured portion and the inoculum. The average temperature during the month of October-November, 1970 has been to be 23 – 30°C. and the humidity ranged between 50 – 69 *per cent.*

After a month the inoculated plants have been examined. It has been found that, in all cases, the plants have taken up the infection. The bark of each plant has been found to show shrinkage at the place of inoculation, while that in the control plants have been found to be in the process of healing. The wounded portion, after three months, has shown the formation of small canker with gaping wound. No callus tissue has, however, been formed at this stage. The inner wood has been found to be exposed due to destruction of internal living tissues. In both transverse and longitudinal section of the stem through wound fungal penetration has been noticed upto depth of 3 – 4 mm. While in the longitudinal direction the mycelium has traversed about 1.4 – 1.8 cm. both downwards and upwards from the place of infection. Lateral spreading of the fungus is, however, insignificant. In the controls the living tissue and internal wood remain unaffected. Careful microscopic observations of the infected area in transverse, radial longitudinal and tangential longitudinal sections of the stems, when staines with picro-aniline blue, (Cartwright, 1929), reveal mycelial growth below the bark in the cambium and underlying tissues. The presence of the mycelium has been noticed in the phellogen, the phelloderm, the phlœm and the xylem but not in the bark. The mycelium has advanced from cell to cell, but in case of mature xylem elements it has penetrated usually through the pits but advancing directly through the walls forming boreholes. The cells of the phellogen at places have been completely penetrated by the mycelium and they have become dead. The intercellular secondary mycelium has been found characteristically to posses clamp-connexions while infection with the primary mycelium has not shown their presence. Lysigenous cavities have been found to be formed in the xylem due to fungal infection. The fungus advances in two ways, one laterally through the phellogen and newly formed parenchymatous cells (phelloderm) and the other centripetally through the phlœm, the cambium and the xylem tissues. The fungus has also invades the phlœm and xylem rays. These facts have shown beyond doubt that the pathogen has established inself within the host tissues.

Re-isolation of the pathogen has been done from the infected plant-tissues and all the isolates have agreed closely with the original mycelia in cultural, morphological and microscopic details.

The results, thus obtained from the inoculation experiments, have indicated that the pathogen *H. polygramma* is a wound parasite. It is presumed that in nature the pathogen has entered the host tissues through some wounds, *viz.*, prunning ends of branches, accidentally broken ends of branches or other wounds. The development of other symptoms and stages require development and observation for several years which is beyond the scope of the present investigation.

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