White Muscardine

Dr.H.B.Mahesha, Yuvaraja's College, University of Mysore, Mysuru.

Experiment No. 10: Study of muscardine and preparation of temporary slides of fungal spores and mycelial mat.

It is the most common and widely prevalent fungal disease found in all sericultural countries. This disease occurs usually during rainy and winter seasons under moderate to low temperature and high humidity conditions.

Causes of the disease: This disease is caused by *Beauveria bassiana belongs* to the family Moniliaceae, order Moniliales of class Fungi imperfecti. Infection is mainly by body contact, rarely through wounds. The disease is highly contagious as the conidia are air borne.

The developmental cycle of *Beauveria bassiana* consists of three distinct stages namely conidium, vegetative mycelium and aerial mycelium.

The conidium is colorless, globular or rarely oval and porcelain white when gathered in a mass. Under favourable conditions the conidium germinates within 8-10 hours of coming in contact with the body of silkworm. The germinating tube of the conidium after invading the blood of the larvae develops into vegetative hyphae. At the tip of the hyphae round or oval shaped short hyphae develops. These often detach themselves and elongate to form vegetative hyphae.

The vegetative hypha comes out of the skin to form aerial hyphae bearing innumerable conidiophores. These conidiophores give rise to small branches which bear one or two conidia.

Symptoms*:* At the early stage of infection symptoms are not distinct, but as the disease advances, moist specks appear on the skin. At this stage, larvae lose appetite and become inactive. The body of the larvae becomes limp, loses its skin elasticity, stops movement and finally they die. Before death, symptoms of diarrhea and vomiting appear. After death, the body is initially soft, but within 6-8 hours it becomes stiff and hard. One to two days later, wooly aerial hyphae grow out between inter-segmental membranes. Subsequently the whole body is covered with white powdery conidia except the chitinous parts of the head. The larvae, unlike other diseases do not rot or decay but remains hard as the fungus secretes double oxalate - crystals of ammonium and magnesium.

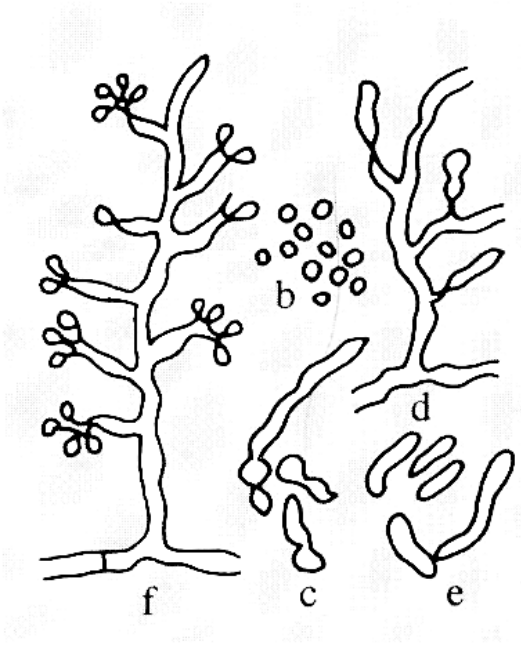
Prevention and Control:

1. Before the commencement of silkworm rearing, rooms, appliances and rearing surroundings must be thoroughly disinfected with 2 percent formalin.

2. Maintenance of strict hygienic and standard atmospheric conditions during rearing.

In addition to the above, formalin chaff, anti-muscardine powders like *Reshamkeet Oushadh* can be fruitfully used to control the outbreak and spread of this disease.

Development Cycle of Beauveria bassiana



a. Mummified larva
b. Conidia
c. Germination of conidia
d. Formation of cylindrical spores
e. Cylindrical spores
f. A conidiophore with conidia

Temporary slide preparation of mycelia mat and conidia

1. Take a drop of fungal suspension on a clean glass slide and make a thin smear, air/flame dry.
2. Fix the material in ethanol/methanol for 1 min and air dry the specimen.
3. Stain in cotton blue and place a cover glass.
4. Observe under a microscope at 400-450 x magnification.

REFERENCES

1. Anonymous, 1990, Hand book on pest and disease control of mulberry and silkworm, United Nations, Thailand.
2. Krishnaswamy, S., Narasimhanna, M.N., Suryanarayan, S.K., and Kumararaj, S. 1976; Sericulture Manuals, Vol. 2, Silkworm Rearing, FAO, United Nations, Rome.
