Spread of the Infectious Flacherie in Rearing Tray of Silkworm, *Bombyx mori* L.¹,²

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Recently some Japanese workers (Yamazaki et al., 1960; Aizawa and Furuta, 1962) have studied on infectious flacherie of silkworm, *Bombyx mori* L. According to their works, the pathogen of infectious flacherie is filterable through Seitz E.K. and that the pathogen is found not only in the several tissues of diseased larvae but also in the excrements.

If a number of silkworm larvae were reared in the same rearing tray, as is a routine in the practical sericulture, and if some of the larvae were infected by infectious flacherie, it is expected that the disease would spread by oral infection because larvae fed on mulberry leaves contaminated by the excrements of the infected larvae and by the disintegrated bodies of dead larvae from the disease.

This paper deals with the incidence of infectious flacherie in a mixed group of health silkworm larvae.

**MATERIALS AND METHODS**

Two hybrid strains, C124×N124 and N124×C124, of the silkworm, *Bombyx mori* L., were used. They were reared in the summer (July-August) and the fall (September-October) of 1961.

The pathogen was kindly provided by Dr. K. Aizawa of the Sericultural Experiment Station in May of 1961, and used in this experiment after successive passages through silkworm larvae at our laboratory.

The inocula were prepared from the dead pestled bodies (a 5-gram wet weight sample from dead bodies were triturated into a suspension with 95 ml of sterile distilled water) by centrifuging (3000 r.p.m. for 10 min.) and filtrating through unlipid cotton substrata.

The pathogen was given with mulberry leaves to newly-hatched larvae. When they grew to the end of the second instar or the beginning of

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the third instar, those larvae which showed the symptoms of flacherie were removed and mixed into fifty healthy larvae which were reared in the same rearing tray.

The first indication of the infection was the loss of appetite and later on the larvae ceased feeding. The symptoms of the infection were the gattine, shrink, swoon etc.

Diagnosis of the dead larvae was made by an ordinary light microscope. If there were no polyhedra in the midgut or hemolymph of the dead larvae, the larvae died from infectious flacherie.

RESULTS AND DISCUSSION

In the first set of experiments, one, five or ten larvae infected with infectious flacherie were mixed into fifty larvae in the first or second instar.

As shown in Fig. 1, the more the infected larvae were mixed, the higher the incidence of infectious flacherie became.

The infection rate was higher in the newly-hatched larvae than in the second-instar larvae, when the same number of infected larvae were mixed. These results indicate that the second-instar larvae are less susceptible to infectious flacherie than newly-hatched ones.

In the second set of experiments five larvae infected with infectious flacherie were mixedly reared with fifty larvae in the second, third or fourth instar for different lengths of period. The results of these experiments are given in Fig. 2. As the period of mixed rearing became longer, the incidence of the infectious flacherie was increased.

Furthermore, it was noteworthy that the high proportion of the test larvae was infected with the disease when infected larvae were mixedly reared for only a day.

When the second-instar larvae were mixedly reared with the infected larvae some died before reaching the fifth instar showing the symptoms of the infectious flacherie. But some survived
and entered into the fifth instar.

Fifty apparently healthy larvae were selected from these larvae and reared in the same rearing tray. All of them, however, died from infectious flacherie within five days.

Further study is necessary before definite conclusions are made from these observations.

SUMMARY

The incidence of infectious flacherie of the silkworm, *Bombyx mori* L. in a mixed group of health silkworm larvae and infected larvae was investigated in relation to number of infected larvae mixed and length of mixed rearing period.

The more infected larvae were mixed, the higher the incidence of infectious flacherie became. As the period of mixed rearing became longer, the incidence of infectious flacherie was increased.

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REFERENCES