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***Research Paper***

# ROLE OF BACTERIA (*STREPTOCOCCUS FAECALIS* & *STAPHYLOCOCCUS AUREUS*), VIRUSES AND THEIR COMBINED INFECTION IN CAUSATION OF FLACHERIE UNDER DIFFERENT ENVIRONMENTAL CONDITIONS

**T. Selvakumar[1] and R. K. Datta**

Central Sericultural Research and Training Institute, Mysore - 570 008, India.

[1]Silkworm Seed Production Centre, National Silkworm Seed Organization, Central Silk Board, K. R. Nagar - 571 602, India.

E-mail: tselvakumar_csb@rediffmail.com

## ABSTRACT

Flacherie is a complicated disease in silkworm caused either by different types of bacteria or viruses or due to their mixed infection. These pathogens prevail in the infected silkworm and rearing environment during all the seasons. In the present study, bacteria *viz., Streptococcus faecalis* and *Staphylococcus aureus,* viruses *viz., Bombyx mori* Infectious Flacherie Virus (BmIFV), *Bombyx mori* Densonucleosis Virus1 (BmDNV1) and *Bombyx mori* Nuclear Polyhedrosis Virus (BmNPV) isolated from infected silkworms were tested for their pathogenicity individually and in combination in silkworm under different environmental conditions such as optimum temperature and humidity (T1), constant high temperature and low humidity (T2) and fluctuating temperature and humidity (T3) conditions maintained for 12 h daily. It was obseved that the combined infection of bacteria (*S. faecalis* and *S. aureus*) and viruses (BmIFV and BmDNV1) cause high level of mortality under fluctuating temperature and humidity conditions (T3: 33.67 – 79.33 %) than high temperature and low humidity (T2: 5.33 – 26.67 %) and optimum temperature and humidity (T1: 0.67 – 4.00 %) conditions and also significantly higher than single infection of bacteria (T3: 27.67-35.67 %; T2: 5.67-6.67 %; T1: 0.33 %) or viruses (0.00 %). But in the case of combined infection of *S. faecalis / S. aureus* with BmNPV, there was no remarkable increase in the larval mortality when compared to individual infection by BmNPV alone. The total mortality caused by the individual infection of BmNPV was 10.33 – 55.67 % under different concentrations and along with *S. faecalis / S aureus,* it caused the same trend of mortality (9.00 – 56.33%). Hence, the mortality recorded under the combined infection of *S. faecalis / S aureus* with BmNPV was prominently due to BmNPV alone under all the environmental conditions tested with no synergism observed in this case.

**Key words:** Environmental conditions, flacherie, combined infection, *S. aureus, S. faecalis,* viruses.