



MOLECULAR MECHANISM OF DENSOVIRUS RESISTANCE IN SILKWORM, *BOMBYX MORI*

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ABSTRACT

Sericulture farmers are often challenged with the situation of disease incidence during the process of silkworm rearing and the consequent cocoon crop losses. Among the known infectious diseases of silkworm, flacherie accounts for substantial crop loss in India due to fluctuating temperature and humidity conditions as well as inferior quality of mulberry leaf. Studies revealed that, *Bombyx mori* densovirus type 2 causes destructive damage during rearing and is reported to be a serious problem with the infected susceptible larvae becoming flaccid, developing diarrhoea and finally die within seven days. BmDENV2 was detected in Indian *B. mori* samples which included productive hybrids such as CSR2 x CSR4 and PM x CSR2 widely reared by sericulturists under Indian conditions, many of them being detected with BmNPV co-infection. The Indian BmDENV2 isolate revealed maximum homology with the Yamanashi DENV2 isolate from Japan and transmission electron microscopy studies on midgut tissues of the Indian isolate of *B. mori* silkworm infected with BmDENV-2 revealed hypertrophy of columnar cell nuclei. An unlinked mutation nsd-2 was discovered to control non-susceptibility to BmDENV2 in *B. mori*. Most of the Indian multivoltine as well as bivoltine silkworm germplasm races harboured either gene for susceptibility or genes for both resistance and susceptibility to DENV2 indicating a heterozygous susceptible condition. Selection of parental stock of silkworm breeds possessing the gene for resistance to BmDENV2 could be a prospective approach towards controlling flacherie disease in the field without compromising on cocoon yield. This review provides a consolidated account on the scientific findings of studies on BmDENV-2 and its molecular pathogenesis in *Bombyx mori*.

Key words: *Bombyx mori*, densovirus, disease resistance, pathogenesis.