INTRODUCTION

Insects possess innate immunity. Injection of microorganism (*E. coli*) induced a combination of humoral and cellular response (Boman and Hultmark 1987). Humoral reaction involves synthesis and release of several antibacterial proteins of 4 types Viz., cecropin, attacin, lectin and moricin have been identified in *B. mori* (Gillespie et al 1997). In *B. mori* cellular responses involves synthesis of six major groups of haemocytes. These cells reacts by phagocytizing in case of small organism or nodulating and encapsulating the large objects. (Miller and Ratcliffe 1994).

MATERIAL AND METHODS

In the present study, 11 silkworm genetic resources comprising 5 multivoltine and 6 bivoltine germplasm accessions were utilized. The study was conducted with 2 sets of 10 numbers of larvae for temperature treatment. In the proleg of the multivoltine larvae 2.5cc of log phase DH5α *E. coli* was injected. After 6 hours incubation hemolymph was collected from the larvae by cutting the legs. To the one set of 6 accession of bivoltine larvae 2.5cc of log phase DH5α *E. coli* was injected and kept it for 1-5 days. To the second set of bivoltine larvae the heat shock treatment was given that is at 41°C for 6 hours. The hemolymph was collected daily from day 1 to day 5 from the bivoltine larvae. The total haemocytes were counted by using haemocytometer from the collected hemolymph. (Bala venkatasubbaiah et al 2001). Antibacterial activity of hemolymph was assayed by measuring the inhibition zone in the LB plates. (Minoru et al 1995). To confirm the induction of immunity in the bacteria treated multivoltine and bivoltine accessions, SDS-PAGE was performed to see the formation of extra protein band (Madhavan and Velpandi 1988)

RESULTS

There was a gradual increase of THC count in all the bacteria treated larvae, the maximum...
Table 1: Value of total haemocyte count in bacteria and temperature treated bivoltine accession

<table>
<thead>
<tr>
<th>Day</th>
<th>Acc. No - 173</th>
<th>Bacterial Treated at 41°C</th>
<th>Acc. No - 176</th>
<th>Bacterial Treated at 41°C</th>
<th>Acc. No - 197</th>
<th>Bacterial Treated at 41°C</th>
<th>Acc. No - 265</th>
<th>Bacterial Treated at 41°C</th>
<th>Acc. No - 271</th>
<th>Bacterial Treated at 41°C</th>
<th>Acc. No - 275</th>
<th>Bacterial Treated at 41°C</th>
</tr>
</thead>
<tbody>
<tr>
<td>2</td>
<td>39.474</td>
<td>30.794</td>
<td>17.516</td>
<td>38.424</td>
<td>24.877</td>
<td>27.754</td>
<td>38.878</td>
<td>33.541</td>
<td>44.114</td>
<td>44.114</td>
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<tr>
<td>3</td>
<td>35.096</td>
<td>32.674</td>
<td>36.022</td>
<td>45.725</td>
<td>56.885</td>
<td>45.576</td>
<td>51.057</td>
<td>57.057</td>
<td>59.229</td>
<td>61.771</td>
<td>62.186</td>
<td>61.771</td>
</tr>
<tr>
<td>4</td>
<td>45.576</td>
<td>41.506</td>
<td>86.453</td>
<td>70.949</td>
<td>61.771</td>
<td>72.995</td>
<td>54.089</td>
<td>57.057</td>
<td>76.826</td>
<td>76.826</td>
<td>76.826</td>
<td>76.826</td>
</tr>
</tbody>
</table>

There was increase of THC counts in temperature treated bivoltine accession also but not as bacterial treated (Table 1). The results obtained with bacteria treated and thermal treated larvae were statistically analyzed. Among 6 bivoltine, maximum inhibition zone of 2.1 CMs diameter was found in BBI-275 followed by BBI-197 with 2 CMs and other inhibition zone of 1.7 CMs BBI-173, 1.5CMs in BBI-176, 1.4 CMs in BBI-265 and 1.35 CMs in BBI-271. In case of multivoltine, maximum inhibition zone of 2.1 CMs was found in BMI-0045 followed by 1.9 CMs in BMI-0001.The results obtained in MV accessions were given in the table 2.

Table 2: T value of total haemocyte count in bacteria injected mv accession and temperature treated multivoltine accession

<table>
<thead>
<tr>
<th>S. No</th>
<th>Races</th>
<th>T. values</th>
</tr>
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<tbody>
<tr>
<td>1</td>
<td>MV-0001</td>
<td>38.537</td>
</tr>
<tr>
<td>2</td>
<td>MV-0027</td>
<td>15.400</td>
</tr>
<tr>
<td>3</td>
<td>MV-0045</td>
<td>24.222</td>
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<tr>
<td>4</td>
<td>MV-0056</td>
<td>23.866</td>
</tr>
<tr>
<td>5</td>
<td>MV-0066</td>
<td>6.881</td>
</tr>
</tbody>
</table>

discussion section.

Count was observed on the 5th day larvae. There was increase of THC counts in temperature treated bivoltine accession also but not as bacterial treated (Table1). The results obtained with bacteria treated and thermal treated larvae were statistically analyzed. Among 6 bivoltine, maximum inhibition zone of 2.1 CMs diameter was found in BBI-275 followed by BBI-197 with 2 CMs and other inhibition zone of 1.7 CMs BBI-173, 1.5CMs in BBI-176, 1.4 CMs in BBI-265 and 1.35 CMs in BBI-271. In case of multivoltine, maximum inhibition zone of 2.1 CMs was found in BMI-0045 followed by 1.9 CMs in BMI-0001. The results obtained in MV accessions were given in the table 2.

The gel electrophoresis study indicated that the response varied among 6 bivoltine accessions maximum number of 4 bands were observed in BBI-197, followed by 3 bands in BBI-176.

Discussion

The increase in the haemocyte counts in the bacteria injected larvae indicated the cellular responses to the foreign bodies. Similar observation were reported by Venkatasubbaiah et al 2001 in the BV larvae infected with Bombyx mori nuclear poly hochoris virus (BmNPV). In the present study race A has indicated 4 extra protein band, which are directly correlated with maximum inhibition zone (2.0 CMs) in that particular accession. From the above study, it can be inferred that among multivoltine accession BMI-0045 are considered as resistant to bacterial infection based on inhibition zone assay. Among bivoltine BBI-0197 and BBI-0197 are considered as resistant to bacterial infections based on the appearance of extra protein observed in the electrophoresis study.
REFERENCES


