

Posters

Role of aphid endosymbionts on virus transmission efficiency

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A large number of phytoviruses are transmitted exclusively by aphids in a circulative manner after transport by the aphid haemolymph to the salivary glands before transmission to new plant short time later. Some proteins, synthesized in aphids by symbiotic bacteria, are hypothesized to bind to virus particles in the haemolymph, to help transfer inside the aphid without any problem and finally promoting viral transmission efficiency. Multiple endosymbionts commonly coexist in the same host insects. The endosymbiotic bacterial partners of aphids fall into two categories: the obligate "primary" symbiont such as *Buchnera* sp. found in almost all aphids and the facultative "secondary" bacteria that are not always present. Particular associations between aphids and both *Buchnera* sp. and secondary symbionts well documented according to adaptation to host plant specificity. In contrast, the impact of specific associations between *Buchnera* and other facultative secondary endosymbionts is less well understood. In order to understand the role of some endosymbionts associated to the primary one in the PeMV (Pea enation Mosaic Virus) transmission, several *Acyrtosiphon pisum* clones presenting different patterns of endosymbionts (*Buchnera-Serratia*, *Buchnera-Spiroplasma*, *Buchnera-Rickettsia*), were used in PeMV efficiency transmission assays on broad bean. The PeMV occurrence in plants was tested by enzyme-linked immunosorbent assay technique (ELISA). The higher virus transmission was found when *Serratia* bacteria was present in the pea aphid. The occurrence of *Serratia* endosymbiotic bacteria was concluded to be very important in the PeMV transmission. Finally, the aphid symbiont pattern modulation was discussed in multitrophic approach and potential control of aphid and associated dispersion of viral diseases.