sieve element phases (E1 and E2). Inversely, the good transmitting clone Sa1 feeds well on barley, with long sap ingestion periods, possibly allowing a better virus acquisition.

PAV and MAV transmission by Rhopalosiphum padi

Twenty-five *R padi* clones were tested for PAV and MAV transmission. They originated from different countries and continents (Europe, North America and North Africa) and exhibited different types of life-cycle (holocycle, anholocycle and androcycle). Concerning PAV4 transmission, we did not find any significant difference between clones, whatever the conditions of the experiments. The percentages of transmission were very high (90–100%) in optimal conditions (48 h acquisition/5 d inoculation) and lower (50–80%) when acquisition time or inoculation time were limiting (6 h). As regards MAV transmission, 2 isolates were compared, MAV2 (Le Rheu) and MAV11 (Versailles). MAV11 was only transmitted by 1 clone (Rp1: 3% transmission) and MAV2 was transmitted by 2 clones, Rp3 (25%) and Rp1 (10%).

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Vector specificity of barley yellow dwarf (MAV, RPV) luteoviruses and virus regulation in aphids. JQ Guo [1], H Lapierre [2], JP Moreau [1] *([1] INRA, unité de zoologie; [2] INRA, unité de pathologie végétale, F-78026 Versailles cedex, France)*

The specificity and efficiency of barley yellow dwarf (MAV, RPV) luteoviruses were tested by using both 3 aphid clones of *Rhopalosiphum padi* L and *Sitobion avenae* Fabr in controlled conditions. All 3 clones of *R padi* and *S avenae* could transmit RPV and MAV, respectively, but vector efficiency was variable among them. Sa-R1 clone was a highly efficient vector (HEV), Sa-V clone was a moderately efficient vector (MEV) and Sa-R5 clone was a poorly efficient vector (PEV) within *S avenae* to transmit MAV. Rp-M and Rp-R26 clones were the HEV and Rp-CH clone was the PEV within *R padi* to transmit RPV.

In the serial transmission test, the 3 clones of *S avenae* and 2 HEV clones of *R padi* successively transmitted their respectively specific virus, MAV and RPV, until the last transfer at 13 d on barley, but the PEV Rp-CH clone transmitted RPV only up to 11 d transfer. After 5 d transfer, the vector efficiency declined obviously for all the clones. MAV and RPV contents in the aphids of 4 out of 6 clones decreased in triphase during the serial transfer, but the biphasic trend of MAV content and the monophasic trend of RPV content were involved in the virus regulation by the aphids of the PEV Rp-CH and the MEV Sa-V. In the triphasic trend, the initial decrease rapidly occurred after the first transfer, and then the virus content decreased slowly, but a relatively fast reduction appeared after 5 d transfer. In the biphasic trend, decrease rates of MAV content in the Rp-CH and Sa-V were nearly identical in each transfer of the second phase. In the monophasic trend, the decrease rates of RPV content were almost similar in every transfer until after 5 d transfer when the virus was no longer detected by ELISA in a batch of 10 aphids.

Detection by immuno-PCR revealed that MAV was retained by the aphids of tested clones until the last transfer at 13 d, except that Rp-CH retained it up to 11 d. RPV could be retained by the aphids of tested clones until the 13 d transfers, but Rp-CH and Sa-V retained it only to 11 and 9 d, respectively. Consequently, the reduction of MAV and RPV contents in the aphids was independent of the viruses that may be specifically transmitted during the serial transmission test. The moderate and poor vector efficiencies of Sa-V and Rp-CH clones were associated with the more rapid decrease of MAV and RPV contents in the aphids respectively. However, the poor vector efficiency of the Sa-R5 clone was not related to the reduction of virus content in the aphids. The selective barrier of accessory salivary glands (ASG) of aphids may determine vector specificity of MAV and RPV transmitted by *S avena* and *R padi* respectively, but clonal variations in vector efficiency within each species were associated with both the selective barrier of ASG and the capacity of virus retention by the aphids.

Assistance to long-distance transport between wheat yellow mosaic virus (WYMV) and soil-borne wheat mosaic virus (SBWMV) in bread wheat cultivars resistant to WYMV.