

Attenuation Effect of Satellite RNA on Cucumber mosaic virus-diseased Tomato Plants

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Summary

It is thought that virus diseases in plants can not to be cured by application of chemicals. Removal of diseased plants from the field is the sole practical counter-measure to prevent diffusion of virus disease. In agriculture as well as medicine, attenuated viruses are used preventively as vaccines to protect plants from damage caused by viruses. We found that an attenuated virus having a satellite RNA reduced symptoms on diseased tomato plants infected with *Cucumber mosaic virus* (CMV). Inoculation tests under various conditions were performed to investigate the ability of the attenuated CMV to reduce mosaic symptoms on CMV-diseased tomato plants. Mosaic symptoms were alleviated from the top leaf of the

diseased plants about 3 weeks after inoculation by post-inoculation of an attenuated virus having a satellite RNA. Furthermore, the attenuated virus improved the quality and quantity of tomato fruits. Symptoms were reduced more effectively if the interval between infection with the CMV strain and inoculation of the attenuated virus was short. The effect was more pronounced on young plants. Challenge inoculation exclusively with satellite RNA molecules resulted in cure of the CMV-diseased tomato plants, indicating that the alleviation of symptoms was due to the satellite RNA. These results show the possibility of plant virus disease protection by satellite RNA that attenuates CMV, i.e., therapy for plant virus disease.

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