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Detection of dsRNA in oaks and elms exhibiting virus-like symptoms

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Surveys in forests, public gardens and tree nurseries have shown that plant viruses are occurring in deciduous trees. For example in European White elm trees (*Ulmus laevis* Pall.) in a public park near Potsdam virus-like symptoms were observed on leaves, such as chlorotic ringspots, mottling, chlorosis along the veins and necrosis. Bacterial and fungal organism could be excluded as well as viruses (CLRv, EMV, ArMV and TRSV) well known to infect elms. Flexible particles of approximately 750 nm were isolated repeatedly and transmitted to *Chenopodium* spp. The virus could not be identified yet but disqualified as a member of the *Potyvirus* family. Mechanical inoculation, electron microscopy and serological tests were used to detect the putative virus, by which Potyvirus-like particles could be excluded as the agent of the symptoms. Also oak trees (*Quercus robur* L.) show a broad spectrum of symptoms like chlorotic mottles, ringspots and mosaic stains which are suspected to be induced by viruses. Oaks in north and middle Germany show these symptoms increasingly but the symptom-inducing agent has not been identified so far.

It is assumed that symptoms observed in elms as well as in oaks are associated with RNA viruses. Confirmation of putative RNA viruses is aspired by detection of dsRNA which is formed as replicative intermediate in plant tissues during infection. A monoclonal antibody specific for dsRNA is used to analyse total nucleic acid isolated from leaf material exhibiting virus-like symptoms. First data show a high molecular dsRNA molecule which leads to the assumption that investigated samples are putatively infected by a member of the Endornavirus family. Another method is to isolate dsRNA directly from infected tissues by specific binding CF11 cellulose in the presence of 16% ethanol accessible for subsequent RT-PCR. A high molecular fragment with more than 4 kb and a 1.6 kb fragment have been amplified from three oak samples and will be sequenced to identify the virus. Analyses of other samples are in progress. Endornaviruses are not yet known to appear in woody plants. If the

hypothesis is confirmed by sequencing and Blast, this would be the characterisation of an endornavirus infection of oaks and elms for the first time.