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## **IUFRO-5 Investigation on virus-like particles associated to decline of *Quercus suber***

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### **Abstract**

Over the last few decades, ecophysiological disturbances of the cork oak (*Quercus suber*) forest have been observed. In affected areas, the decline symptoms of cork trees evolved by the deterioration of the crown which, starting with leaf necrosis and vigour loss, led some trees to sudden death. Factors grouped as follows: predisposing factors (social system, physical complex and production system), trigger factors (abiotic factors such severe drought spells and human intervention factors) and acceleration factors (pests and diseases and human action-wounds of cork stripping, stripping intensity and dead trees maintenance) were reported to be associated with the cork oak decline. However, the result obtained up to now have not satisfactorily explained the exact nature and specific causes of the phenomena.

Scanning (SEM) and Transmission electron microscopy (TEM) of symptomatic leaves homogenates revealed the presence of isometric virus-like particles with 20-30 nm in diameter and the presence of 5-6 giant, unusual rod-shaped virus particles about 2-3 µm in length, with an end round and the other one flattened, emerging from a broken, putative proteinaceous occlusion body.

Further studies, focused on the extraction and analysis by electrophoresis of double stranded RNA (dsRNA) from leaf material showed the presence of a pattern of multiple dsRNA bands. A degenerate oligonucleotide primer PCR (DOP-PCR) for the non-specific amplification of virus as well as general PCR primer sets for different virus genera were used. Cloning and sequencing of some cDNA fragments allowed the obtention of sequences without similarity with virus sequences.

Consequently, the goal of our studies is to improve the knowledge about the detection and molecular characterization of virus-like particles associated to decline of *Quercus suber*.