

Perkinsosis in Europe: Current issues and research needs

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The aim of this workshop was to review current issues posed by perkinsosis in Europe with particular emphasis on taxonomy, epidemiology and impact on mollusc stocks, and identify where new developments in research are likely to improve our knowledge and understandings.

Over 67 species of molluscs are known worldwide as species susceptible to infection with parasites of the genus *Perkinsus*. Infection may be associated with high mortality rates. Two species - among the seven which have been described - *Perkinsus marinus* and *P. olseni* are given particular attention because of their impact on aquaculture. The species described in Europe and Asia, *Perkinsus atlanticus*, has close taxonomic relationships with *P. olseni* and synonymy was proposed, with the name *P. olseni* having priority. Accepting this perspective, the host and geographic range for *P. olseni* is very broad. Within this range, the recognised variability in the pathogenicity of *P. olseni* raises questions on the existence of types or strains of the parasite or differences in host responses

under different environmental conditions. Another important consideration refers to diagnosis. In fact, two species of *Perkinsus* can occur in the same geographic area (see *P. atlanticus* and *P. Mediterranei*), even sometimes infecting the same hosts (not described in Europe but see *P. marinus* and *P. chesapeakei*). The lack of distinctive morphological features therefore renders the specific identification of *Perkinsus* isolates extremely difficult in diagnostic laboratories. Because of the significance of the disease, it is important to be able to differentiate between pathogenic and supposed non-pathogenic groups and/or species and also to anticipate their potential economic impact.

The workshop hosted five scientific communications including a contribution from the Working Group on Pathology and Diseases of Marine Organisms (ICES-WGPDMO).

An initial list of research topics that were identified to be given consideration by the scientific community was discussed by attendants. These topics, regardless of their priority, are listed below.

Surveys to accurately assess host range and geographic distribution in Europe are necessary, as well as to determine if isolates show genetic and/or virulence differences.

The description of new species or types would need a common methodological approach and deposition of isolates in public collections or repositories. Such a common approach would certainly need co-ordination of the investigation efforts of different research groups involved in the study of *Perkinsus*.

While co-ordinating such efforts and using a common collection of material, studies are needed to describe the morphological differences existing between isolates and named species by accurate comparison of the various *in vitro* developmental stages.

If morphological characteristics prove too poorly reliable for species identification, implementation of DNA based tools for diagnosis should be considered, developed, tested and validated for their accuracy, sensibility and specificity.

A preliminary requirement will be the identification and assessment of regions of the genome which provide discriminators for species and strains of *Perkinsus* and ultimately accurate differentiation.

A polyphasic approach incorporating data from molecular, cellular pathology and epidemiology studies is recommended.

Although utilisation of non-specific methods - such as fluid thioglycollate medium culture and histo-pathology - is suitable for the initial detection of perkinsosis, it is not an option for specific identification of any isolate regardless of geographic origin or host identity.

Factors leading to clinical expression of infection with *Perkinsus* are still poorly understood and further studies aiming at their identification and assessment are likely to provide the information needed to a better management of the disease in endemic areas.