

SPECTROSCOPIC STUDIES OF MOSQUITO
IRIDESCENT VIRUS, ITS CAPSID
PROTEINS, LIPIDS, AND DNA

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S u m m a r y

Mosquito iridescent virus (MIV) is an icosahedric lipid-containing virus which affects mosquitos of *Aedes*, *Culex*, *Culiseta* genera. Apart from mosquitos and other insects, iridoviruses cause the mass death of fish and can cause huge losses for industrial fish breedings. The MIV virion consists of a core of the genetic material (double-stranded viral DNA) surrounded by a capsid (icosahedral protein shell) and further encased in a lipid envelope.

The aim of the work was to determine the role of MIV virion constituents (lipids, capsid proteins, and viral DNA) in the formation of spectral properties of the whole MIV virions.

Measured are UV-Vis absorption, fluorescence, fluorescence excitation, and phosphorescence spectra of MIV virions, their capsid proteins, lipids, and viral DNA dissolved in various buffers.

It is shown that the UV absorption of MIV virions is caused by the absorption of all virion constituents such as capsid proteins, lipids, and viral DNA. The fluorescence of MIV virions at room temperature is mainly due to the fluorescence of capsid proteins. The spectra measured at low temperatures make it possible to identify the type of a nucleic acid (DNA or RNA) inside the virion thanks to the fact that the DNA and RNA phosphorescence spectra are radically different.