

Horizontal transmission of koi herpes virus (KHV) from potential vector species to common carp

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Abstract

Six fish species, defined as potential vectors in koi herpes virus (KHV) transmission, namely: common roach, European perch, tench, Eurasian ruffe, silver carp and grass carp were included in this study. The fish used to transmit infection originated from a fish culture facility where KHV had been diagnosed and prior to the beginning of the research study the presence of the virus genome was confirmed in each individual fish intended for cohabitation. Specific pathogen free (SPF) carp utilized in the experiment originated from the University of Wageningen. During a four-week period the SPF carp were exposed to infection through cohabitation with vector species previously confirmed as KHV carriers. The obtained results demonstrated the possibility of a horizontal transmission of KHV between selected species, even in the case of species showing no clinical signs of KHV disease (KHVD), while an average water temperature in the tanks ranged from 12°C to 16°C.

Introduction

Koi herpes virus (KHV) disease (KHVD) is a serious viral disease causing mass mortality in the species *Cyprinus carpio*. According to previous research, clinical signs can be observed not only in common carp (*C. carpio*), but also in hybrids: *C. carpio* x *Carassius carassius* and *C. carpio* x *Carassius auratus*. Immersion aquaria challenge experiments, showed severe losses after a waterborne KHV infection of between 35% and 100% in koi x goldfish and koi x crucian carp hybrids as well as in (specific-pathogen-

free) SPF common carp (Bergmann et al., 2010). The possibilities of the virus being transferred by fish species other than carp were analysed as part of an experimental study performed by Kempter et al. (2008). According to the results, during experimental infection by immersion, species such as tench (*Tinca tinca*), vimba (*Vimba vimba*), common bream (*Abramis brama*) and grass carp (*Ctenopharyngodon idella*) can transmit KHV to SPF carp when water temperatures range between 18 and 27°C. The four potential

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