

VIRUS INTERFERENCE AND OCCURRENCE IN CRUSTACEANS

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Virus interference is a phenomenon first observed in the XVIII century and studied even before virology was recognized as a science. The first studies on virus interference were done in the 1930s and 1940s in viruses infecting different vertebrate or bacterial hosts. Virus interference has been reported to occur between viruses that are pathogenic to humans or to animals of economic importance.¹ Recently it has been suggested that interference may occur between influenza virus and the coronavirus causing the pandemic disease COVID-19.² Thus, the phenomenon may have medical or animal-production relevance due to the possibility to use it as alternative to chemical therapies against virus infections, to reduce the severity of disease/mortality caused by a superinfecting virus. Virus interference induces host resistance to a superinfection caused by a pathogenic virus causing obvious signs of disease and/or mortality, due to the action of an interfering virus abrogating the replication of the former virus. Different degrees of inhibition of the superinfecting virus can occur. Due to the emergence of novel pathogenic viruses, virus interference may become an important antiviral strategy against different pathogens in various hosts, including commercially important farmed aquatic species.

Evidence of interference has been reported between some highly pathogenic viruses mainly affecting farmed shrimp [interference between Yellow-head virus (YHV) and Taura syndrome virus (TSV)], and interference between a highly pathogenic virus [white spot syndrome virus (WSSV) and the less damaging virus [infectious hypodermal and hematopoietic necrosis virus (IHHNV)]. The latter virus interaction has by far been better studied.

This paper presents data on virus interference between WSSV and IHHNV, as well as between TSV and YHV, resulting in reduced disease and mortality of affected shrimp hosts (*Penaeus vannamei*, *P. stylirostris*, *P. monodon*, *P. duorarum*). This phenomenon may be applied as a potential natural strategy to control highly pathogenic virus infections in these animals.

References

- ¹Escobedo Bonilla C.M. 2021. Mini Review: Virus Interference: History, Types and Occurrence in Crustaceans/ *Front Immunol.* 12: 674216. Published online 2021 Jun 11. doi: 10.3389/fimmu.2021.674216.
²Yang L, He D and Wang L. 2021. Editorial: Interference of COVID-19 and Influenza Infections. *Front. Public Health* 9:818199. doi: 10.3389/fpubh.2021.818199.