Diversity of Flavobacterium psychrophilum and the potential use of its phages for protection against bacterial cold water disease in salmonids - DTU Orbit (09/01/2019)

Diversity of Flavobacterium psychrophilum and the potential use of its phages for protection against bacterial cold water disease in salmonids

Flavobacterium psychrophilum causes rainbow trout fry syndrome (RTFS) and cold water disease (CWD) in salmonid aquaculture. We report characterization of F. psychrophilum strains and their bacteriophages isolated in Chilean salmonid aquaculture. Results suggest that under laboratory conditions phages can decrease mortality of salmonids from infection by their F. psychrophilum host strain. Twelve F. psychrophilum isolates were characterized, with DNA restriction patterns showing low diversity between strains despite their being obtained from different salmonid production sites and from different tissues. We isolated 15 bacteriophages able to infect some of the F. psychrophilum isolates and characterized six of them in detail. DNA genome sizes were close to 50 Kbp and corresponded to the Siphoviridae and Podoviridae families. One isolate, 6H, probably contains lipids as an essential virion component, based on its chloroform sensitivity and low buoyant density in CsCl. Each phage isolate rarely infected F. psychrophilum strains other than the strain used for its enrichment and isolation. Some bacteriophages could decrease mortality from intraperitoneal injection of its host strain when added together with the bacteria in a ratio of 10 plaque-forming units per colony-forming unit. While we recognize the artificial laboratory conditions used for these protection assays, this work is the first to demonstrate that phages might be able protect salmonids from RTFS or CWD.

General information
State: Published
Organisations: Bacteriology & Pathology, Division of Veterinary Diagnostics and Research, National Veterinary Institute, University of Copenhagen, Universidad de Chile
Contributors: Castillo, D., Higuera, G., Villa, M., Middelboe, M., Dalsgaard, I., Madsen, L., Espejo, R. T.
Pages: 193-201
Publication date: 2012
Peer-reviewed: Yes

Publication information
Journal: Journal of Fish Diseases
Volume: 35
Issue number: 3
ISSN (Print): 0140-7775
Ratings:
Web of Science (2019): Indexed yes
BFI (2018): BFI-level 1
Web of Science (2018): Indexed yes
BFI (2017): BFI-level 1
Scopus rating (2017): CiteScore 1.82
Web of Science (2017): Impact factor 2.004
Web of Science (2017): Indexed yes
BFI (2016): BFI-level 1
Scopus rating (2016): CiteScore 2.12
Web of Science (2016): Impact factor 2.138
Web of Science (2016): Indexed yes
BFI (2015): BFI-level 1
Scopus rating (2015): CiteScore 1.71
Web of Science (2015): Impact factor 2.053
Web of Science (2015): Indexed yes
BFI (2014): BFI-level 1
Scopus rating (2014): CiteScore 1.99
Web of Science (2014): Impact factor 2.056
Web of Science (2014): Indexed yes
BFI (2013): BFI-level 1
Scopus rating (2013): CiteScore 1.74
Web of Science (2013): Impact factor 1.507
ISI indexed (2013): ISI indexed yes
Web of Science (2013): Indexed yes
BFI (2012): BFI-level 1
Scopus rating (2012): CiteScore 1.7