Diet type dictates the gut microbiota and the immune response against Yersinia ruckeri in rainbow trout (Oncorhynchus mykiss) - DTU Orbit (27/12/2018)

Diet type dictates the gut microbiota and the immune response against Yersinia ruckeri in rainbow trout (Oncorhynchus mykiss)

This study investigated the influence of the rainbow trout (Oncorhynchus mykiss) commensal intestinal microbiota in connection to an experimental Yersina ruckeri infection, the causative agent of enteric redmouth disease. One marine and one plant diet was administered to two different groups of rainbow trout. The plant-based diet gave rise to an intestinal microbiota dominated by the genera Streptococcus, Leuconostoc and Weissella from phylum Firmicutes whereas phylum Proteobacteria/Bacteroidetes/Actinobacteria dominated the community in the marine fed fish. In connection to the Y. ruckeri bath challenge there was no effect of the diet type on the cumulative survival, but the number of Y. ruckeri positive fish as measured by plate count and the number of fish with a 'high' number of reads belonging to genus Yersinia as measured by 16S rRNA next-generation sequencing was higher for marine diet fed fish. Furthermore, the two experimental groups of fish showed a differential immune response, where Y. ruckeri challenged marine diet fed fish had a higher transcription of IL-1β and MBL-2 relative to challenged plant diet fed fish. The data suggest that the plant diet gave rise to a prebiotic effect favouring the presence of bacterial taxons proving protective in connection to bath challenge by Y. ruckeri.

General information
State: Published
Organisations: National Veterinary Institute, Section for Bacteriology, Pathology and Parasitology, University of Copenhagen
Pages: 624-633
Publication date: 2014
Peer-reviewed: Yes

Publication information
Journal: Fish and Shellfish Immunology
Volume: 40
Issue number: 2
ISSN (Print): 1050-4648
Ratings:
BFI (2018): BFI-level 1
Web of Science (2018): Indexed yes
BFI (2017): BFI-level 1
Scopus rating (2017): CiteScore 3.37 SJR 1.126 SNIP 1.103
Web of Science (2017): Impact factor 3.185
Web of Science (2017): Indexed yes
BFI (2016): BFI-level 1
Scopus rating (2016): CiteScore 3.36 SJR 1.128 SNIP 1.142
Web of Science (2016): Impact factor 3.148
Web of Science (2016): Indexed yes
BFI (2015): BFI-level 1
Scopus rating (2015): CiteScore 3.19 SJR 1.265 SNIP 1.16
Web of Science (2015): Indexed yes
BFI (2014): BFI-level 1
Scopus rating (2014): CiteScore 2.92 SJR 1.14 SNIP 1.098
Web of Science (2014): Impact factor 2.674
Web of Science (2014): Indexed yes
BFI (2013): BFI-level 1
Scopus rating (2013): CiteScore 3.11 SJR 0.997 SNIP 1.138
Web of Science (2013): Impact factor 3.034
ISI indexed (2013): ISI indexed yes
Web of Science (2013): Indexed yes
BFI (2012): BFI-level 1
Scopus rating (2012): CiteScore 3.02 SJR 1.156 SNIP 1.169
Web of Science (2012): Impact factor 2.964
ISI indexed (2012): ISI indexed yes
Original language: English

Keywords: IMMUNE response in fishes, Gut microbiota, 16S rRNA, Immune gene transcription, Yersinia ruckeri, Lactobacillaceae

DOIs:
10.1016/j.fsi.2014.08.021

Source: Findit
Source-ID: 270300714

Research output: Research - peer-review › Journal article – Annual report year: 2014