Meetings International
SciTechnol

Huria Marnis et al., J Mar Biol Oceanogr 2019, Volume: 8
DOI: 10.4172/2324-8661-C1-017

2nd International Conference on

AQUACULTURE & MARINE BIOLOGY

March 25-26, 2019 | Paris, France

Transcriptomic analysis of Baltic cod (*Gadus morhua*) liver infected with *Contracaecum osculatum* third stage larvae indicates parasitic effect on growth and immune response

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Baltic cod (*Gadus morhua*) is an important fish species on the world market but during the latest decades a marked increase of infections with third-stage larvae of the anisakid nematode *Contracaecum osculatum* in cod from eastern part of this brackish sea has been observed. Marked increases of the grey seal (*Halichoerus grypus*) population in this marine area explains the rise in infection level as this marine mammal is the final host of the parasite species. Concomitant with the rise in parasite abundance it has been noted that condition and growth of this codfish have decreased suggesting a parasite-induced effect. To investigate any association between parasite infection and physiological status of the host we performed a comparative transcriptomic analysis of liver obtained from *C. osculatum* infected and non-infected cod. A total of 47,025 unigenes were identified from cod liver, of which 2,085 (4.43%) unigenes were differentially expressed in the infected liver when compared to non-infected. Of the differentially expressed unigenes (DEGs) 1,240 unigenes were up-regulated while 796 were down-regulated. The Gene Ontology (GO) enrichment analysis showed that 845 DEGs were highly represented in cellular process and single-organism process, cell and cell part, binding and catalytic activity. As determined by the Kyoto Encyclopedia of Gene and Genomes (KEGG) Pathways analysis, 241 DEGs were involved in 753 pathways. Eighty DEGs were related to metabolic pathways including carbohydrate, lipid, and amino acid metabolism. Twenty-four regulated genes were playing a role in immune response and twenty-five genes (most of which were down-regulated) were associated with growth of Baltic cod which indicated that the worm larva infection had significant effects on molecular mechanism involving metabolism, immune function and growth.

Biography

Huria Marnis is enrolled PhD student at Department of Veterinary and Animal Science, University of Copenhagen, Denmark. She is a researcher at Research Institute for Fish Breeding, Ministry of Marine Affairs and Fisheries Republic of Indonesia.

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