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## Dietary fat can modify the mRNA level of inflammation markers in *Salmo salar*

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**Background:** Different dietary fat is one of the important factors in the regulation of immune response. Fish oil rich (FO), phospholipid rich (PL) and vegetable oil (VO) based feedings can affect the expression of pro- and anti-inflammatory interleukins in wild (W) and aquaculture (A) fish. To investigate the role of these diets on inflammation, we conducted a 12 weeks experiment on *Salmo salar* larvae in Frøya aquaculture facility, NTNU.

**Methods:** The gill samples of aquaculture type fish and wild type fish were collected and kept at -80 until day of analysis. The RNA was extracted and gene expression of pro-inflammatory interleukins such as IL-8, IL-17, IL-17 receptor and MHC-II and anti-inflammatory interleukins such as TGF 1-beta and IL-10, and the fatty acid related factors was measured by RT-PCR.

**Results:** The gene expression findings were significantly different among 6 groups for pro-inflammatory markers IL-8, IL-17, IL-17 receptor and MHC-II, and anti-inflammatory markers TGF1-beta and IL-10. There were no significant differences among the fatty acids related factors. The gene expression of IL-8 in AFO (Aquaculture fish with vegetable oil rich feeding) group compared to AVO group, in WFO group compared to WVO group, and in WPL group compared to WVO group was downregulated significantly as Ct change fold values 0.12, 0.12 and 0.23 times, while this parameter was upregulated significantly 13.54 and 26.01 times in AVO versus WPL groups and AVO versus WFO groups. The ratio was higher in APL group compared to WFO group.

**Conclusion:** The n-3 fatty acids in PL diet are different from FO diet, there are more phospholipid rich n-3 fatty acids from krill oil and herring roe resources that result in a reduced inflammatory response regarding to mRNA level of IL-8 in the gill.

### Biography

Mahsa Jalili is a PhD candidate of Medical Technology. Her project is about diet and inflammation in Atlantic salmon.

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