Changes in antioxidant defences of rainbow trout fry fed oxidised lipid during early development

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Objective

To characterise the changes in antioxidant defence system of rainbow trout (*Oncorhynchus mykiss*) fry fed oxidised lipid during early development.

Materials and methods

- **6 semi-purified casein based diets**

Diet	R1	R2	R3	R4	R5	R6
Fresh fish oil	12%	-	12%	-	12%	-
Oxidised fish oil	-	12%	-	12%	-	12%
Soybean lecithin	6%	6%	-	-	-	-
Egg lecithin	-	-	6%	6%	-	-
Soybean oil	-	-	-	-	6%	6%

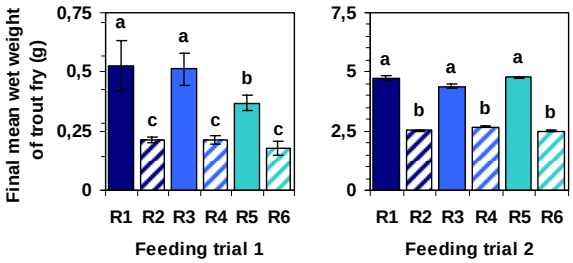
- **Rainbow trout**

swim-up fry
(mean initial weight: 0.1g)

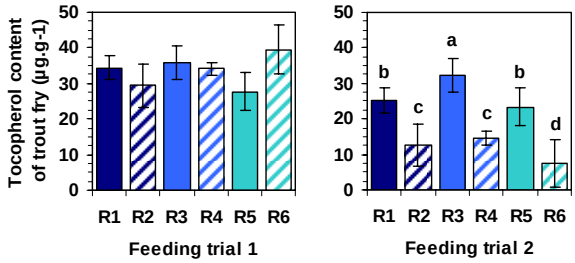
8-week fry
(mean initial weight: 1g)

Two 4-week feeding trials at 17°C

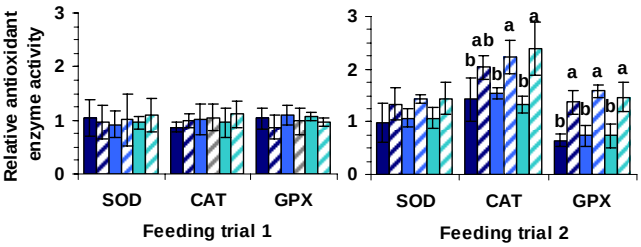
Results



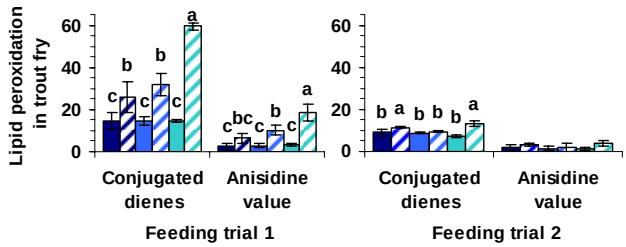
- Reduced growth in fry fed oxidised lipid in both trials
- Reduced growth in fry fed without phospholipid during early stages



- No differences in final whole body levels of vitamin E between dietary treatments in trial 1 with swim-up fry
- Lower tocopherol contents in 8-week fry fed oxidised lipid



- Low dietary control of antioxidant enzymes in trial 1
- Increased activities of all antioxidant enzymes in fry fed oxidised lipid in trial 2



- Higher content of lipid peroxidation products in body lipid of swim-up fry fed oxidised lipid
- Decreased differences between dietary groups in trial 2

Conclusion

Compared to late developmental stages, early stages are more susceptible to dietary oxidative stress, possibly due to lower response of endogenous antioxidant defence system.

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