Effects of menadione sodium bisulfite supplement on the lipid content, growth and mortality in mummichog (*Fundulus heteroclitus*)

Vitamin K plays an essential role in blood coagulation as well as regulating bone growth and development in terrestrial mammals and marine vertebrates. The effects of three dosages of synthesized vitamin K on the production of lipids, growth rates, and mortality in *Fundulus heteroclitus* were investigated during a seven week treatment period. Lipid samples from the livers and muscle tissues of the fish were extracted and quantified through spectrophotometry. The highest observed lipid content (~0.82%) originated from the livers of the fish fed vitamin K concentrations of 25 mg · kg^{-1} and 2500 mg · kg^{-1}. There was an overall decrease (-0.15%) in the lipid content in the muscle tissue of *F. heteroclitus* after being fed both vitamin K concentrations, although growth rates and mortality between treatments were not significantly affected by the vitamin supplement. There were no observed signs or symptoms of a decrease in the overall health of the *F. heteroclitus* within the treatments, other than a slight reduction in mean body mass in the three treatments and one mortality in the Control. These results suggest that the lipid-soluble vitamin K contributes to a larger total lipid content within the *F. heteroclitus*, but it does not lead to an accelerated growth rate. The fish oil industry might benefit from this knowledge since it could reduce the costs associated with oil production.

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