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Session 4

Vitamin D in salmonids – wild and farmed, from head to tail – impact on dietary intake?

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Introduction

Salmon (*Salmo salar*) and rainbow trout (*Onchorhynchus mykiss*) are generally stated as having high vitamin D content. However, the data available for the content of vitamin D are very limited. We investigated the variation of vitamin D within individual wild salmon, and between wild salmon, farmed salmon and farmed rainbow trout. The hypotheses were that content of vitamin D varies depending on the part of the salmon consumed, and that wild salmon has a higher content of vitamin D than farmed salmonids.

Method

Variation of vitamin D within wild salmon (n=3) was assessed by dividing one of the fillets into eight parts. Furthermore, content of wild salmon (n=5), farmed salmon (n=13), and farmed trout (n=18) was analyzed for content of vitamin D [vitamin D₃ and 25-hydroxyvitamin D₃ (25OHD₃)] by LC-MS/MS, and for fat.

Results

The variation in vitamin D and fat content within wild salmon were 10.6-34.9 µg vitamin D₃/100g, 0.17-0.47 µg 25OHD₃/100g, and 4.2-14.7g fat/100g. Between the three salmon no significant difference was found for fat, but there were significant differences in the content of vitamin D₃ ($P < 0.00001$), and 25OHD₃ ($P < 0.05$).

In the wild salmon, the calculated content in 100 gram of raw fillet was between 13.7 and 30.7 µg vitamin D₃.

Wild salmon had significantly higher vitamin D₃ content than farmed salmon, and farmed rainbow trout, 18.5±4.6, 1.6±0.5, and 5.0±2.3 µg/100 g, respectively.

Conclusion

The huge variation in vitamin D within a salmon fillet, and the significantly lower vitamin D content in farmed versus wild species will have a negative impact on dietary intake.