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Cod severely affected by thiamine deficiency in the Baltic Sea

Newly published research shows that a Baltic Sea population of Atlantic cod (*Gadus morhua*) is severely affected by thiamine (vitamin B_1) deficiency. This work was done by researchers at Stockholm University and the Swedish University of Agricultural Sciences in Lysekil, together with a colleague at Western Washington University, Bellingham, USA. Thiamine is an essential vitamin for all animal cells.

Using both analytical chemistry and biochemical methods, thiamine deficiency was confirmed in vital tissues such as liver and brain of cod. The magnitude of the deficiency was seen to increase with the age and size of individual animals. Overall, the measured thiamine deficiency is sufficient to explain the many observations of poor body condition reported in these cod from the eastern Baltic Sea, as well as reports of other disturbances, such as problems with balance, increased prevalence's of disease, and increased mortality.

A review of the scientific literature strongly indicates that the eastern Baltic cod have been affected by thiamine deficiency for over twenty years. Tracy K. Collier, a participating scientist from the US, suggests that corresponding studies should be conducted in Atlantic cod along the North American coast, where similar clinical signs have been observed amongst the cod during many years, and where populations of cod have remained extremely low, despite large reductions in fishing effort.

In conclusion, Atlantic cod have now been added to the list of over 30 wild species that have proven to be affected by thiamine deficiency. Thiamine deficiency, occurring in many animal species and over large geographic areas, needs to be considered as a contributing factor to the ongoing global mass extinction of many animal species, says Josefin Engelhardt, the lead author to the article. This ongoing loss of species, which includes a large loss of genetic diversity, has been identified by other researchers as the most serious threat against our planet's ecosystem. Consequently, there is an urgent need for society to investigate thiamine deficiency, especially studies aimed at understanding the mechanism(s) and causative agent(s).

The work "Severe thiamine deficiency in eastern Baltic cod (*Gadus morhua*)" (DOI: pone.0227201), was produced at three universities, under the direction of Professor Lennart Balk at Stockholm university, and published in the well respected USA-based Journal, PLOS ONE, available by open access at https://journals.plos.org/plosone/article?id=10.1371/journal.pone.0227201. The research has been financed by the foundation Göte Borgströms stiftelse för fiske- och vattenvård.

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