

Huskies lend insight into mercury risk

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Researchers have highlighted the serious health risks associated with the diets of indigenous people by linking the accumulation of mercury in their primary food source to a decrease in the power of antioxidants.

Published today, 21 November, in IOP Publishing's journal *Environmental Research Letters*, the study used Alaskan huskies to demonstrate the risk posed by contaminants, such as mercury, in the subsistence diets that both [indigenous people](#) and huskies live on.

Huskies are an ideal model for humans as they are exposed to the same [environmental hazards](#) and have already been proven as an effective indicator of human ageing, [immune function](#), [toxicology](#) and cognitive disorders.

Data taken from the huskies maintained on a diet of [black bear](#), moose,

pike and salmon showed an inverse correlation between [mercury exposure](#) and antioxidant status: as the mercury exposure increased, the antioxidant status of the huskies decreased.

Antioxidants – substances that play a critical role in protecting cells – stop electrons being ripped from other molecules. If antioxidants are not functioning properly, electron removal, also known as oxidation, can trigger chain reactions leading to cell damage and eventually cell death.

This damage, also known as oxidative stress, is thought to contribute to the development of a wide range of diseases including Alzheimer's, Parkinson's, diabetes and motor neuron disease. As such, antioxidants are widely used ingredients in a large number of dietary supplements, and have been investigated in the prevention of cancer and cardiovascular disease.

People in rural Alaskan communities live a subsistence lifestyle firstly to survive, and also to uphold traditional, cultural and spiritual values; however, they are becoming increasingly concerned with the health implications from foods such as pike and other fish due to the vast array of pollutants, such as mercury, making their way into the ecosystem. The main sources of mercury injection into the ecosystem are coal-generated power plants.

The researchers, from the University of Alaska Fairbanks, analysed groups of 12 huskies in four villages along the Yukon River and in a reference kennel. The huskies were typical racing dogs with similar lineage, sex and age and in their peak racing years. The huskies kept in the reference kennel were fed on a balanced, commercial diet.

After two months of feeding the huskies on the subsistence diets, blood samples were taken to determine their antioxidant power whilst hair samples were taken to determine total mercury concentrations in their

body.

The lead author of the study, Professor Kriya Dunlap, said: "The amounts of mercury in the salmon are well below Environmental Protection Agency limits and the health benefits compared to processed food are still quite significant; however, the fact that health indices may be impaired by mercury levels indicates that monitoring should continue and that mercury generation should be monitored."

More information: "Mercury interferes with endogenous antioxidant levels in Yukon River subsistence-fed sled dogs" Kriya L Dunlap, Arleigh J Reynolds, S Craig Gerlach and Lawrence K Duffy 2011 *Environ. Res. Lett.* 6 044015. iopscience.iop.org/1748-9326/6/4/044015

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