

# MERCURY EXPOSURE IN REMOTE FISH EATING POPULATIONS AND CARDIOVASCULAR RISK FACTORS

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**Background and aims:** More and more data suggest that the cardiovascular system should be considered a potential target for mercury. For example, work conducted in the Faeroe Islands in children and in Greenland suggests associations between mercury exposure and blood pressure and heart beat variability which are known risk factors for cardiac health. Other studies conducted in Europe suggest association between mercury and increase risk of myocardial infarction.

**Methods:** We have studied three large remote fish eating communities in the Arctic, sub Arctic and South Pacific which are exposed to high doses of mercury (3 adults and 1 child cohorts) Mercury was measured in blood as well as potential confounding nutritional factors and Paraoxanase (PON) 1 activity. Heart Rate Variability (HRV) and blood pressure were also measured.

**Results:** Mercury concentrations in blood averaged 86, 75, 49 and 81 nmol/L in adults from Nunavik, (Arctic Québec), French Polynesians, James Bay Crees Indians and Inuit newborn respectively.

In most of these studies we found that mercury exposure was associated with decrease HRV and increase blood pressure. For example, in Inuit adults, we found that a 10 percent increase in blood mercury was associated with an increase of 0.2 mm Hg in systolic blood pressure after controlling for other factors. Concerning biomarkers, our results in Inuit adults suggest that in a multiple regression model adjusted for age, HDL-C, omega-3 fatty acids, and *PON1* variants, blood mercury concentrations were negatively associated with *PON1* activities [ $\beta = -0.022$ , standard error (SE) = 0.005,  $p < 0.001$ ], whereas blood selenium concentrations were positively associated with *PON1* activities ( $\beta = 0.024$ , SE = 0.004,  $p < 0.001$ ).

**Conclusion:** Since heart diseases represent the most important causes of death, even a slight negative impact on the cardiovascular system could be of greater public health relevance than any other health effects related to mercury exposure.