Relation Between Methylmercury Exposure and Serum Paraoxonase Activity in Cree and Inuit Communities of Northern Québec (Foods + Ingested Particles)

Objectives being Investigated
Methylmercury (MeHg) exposure has been linked to an increased risk of cardiovascular diseases, in particular myocardial infarction. Paraoxonase 1 (PON1) is an enzyme located in the high density lipoprotein (HDL) fraction of blood lipids. It metabolizes toxic oxidized lipids associated with both low density lipoprotein (LDL) and HDL. MeHg and various metals (Cd, Co, Cu, Fe, Mn, Ni, Zn) have been shown to inhibit PON1 activity in vitro but the relation between metal exposure and PON1 activity has not been studied in human populations. We hypothesize that mercury concentration in blood could be linked to decreased serum PON1 activity in populations highly exposed to methylmercury such as Aboriginal populations relying on fish for sustenance. PON1 activity will be determined in serum samples from participants to the Cree Health Survey who will be recruited in two Northern Quebec Cree communities to be visited in 2007. Associations between PON1 activity and metals will be tested, taking into consideration possible confounders. The influence of PON1 genotypes will be taken into consideration. In addition, we will examine possible relations between PON1 activity and the concentration of oxidized LDL, and the thickness of the carotid intima media.

Study/Sampling Design
Cross-sectional population studies implemented in Cree communities in Northern Quebec and Inuit communities in 'Nunavik'.

Number of projects providing material for study: 0

Location of Field Site(s)
--- none provided ---

Human Studies

Outcome or Process Studied
Cardiovascular diseases in relation to metal/metalloid exposure.
**Exposure Medium, and Metals/Substances Quantified**
Blood samples: Co, Cd, Cu, Fe, Hg, Mo, Ni, Pb, Se and Zn Toe nails: As and Se

**Biological Endpoint(s) Monitored**
Serum paraoxonase activity and protein level.

**Biota Studied**

*Species*
--- none provided ---

*Metals, etc. Quantified*
--- none provided ---

**Biological Endpoint(s)**
--- none provided ---

**Physical Material(s) Studied**

*Medium/Media*
--- none provided ---

*Metals, etc. Quantified*
--- none provided ---

**Bibliographic References on-file with Secretariat:** No

**Data Available:** No

**Data Archived with MITHE-SN:** No

**Collaborators**

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