

Nutrient Analyses of Non-Commercial FoodsEaten by Canadian Inuit and Indians.Objective:

To determine the nutrient value of non-commercial foods as prepared and eaten by Canadian Inuit and Indians.

Background:

On the basis of dietary and/or biochemical evidence significant numbers of Indians and Eskimos were found by Nutrition Canada to be at risk of deficiency of ascorbic acid, iron, calcium, vitamin D, vitamin A, and folate. This conclusion is based to a large degree on estimations because reference material on the nutrient value of indigenous foods consumed by Inuit and Indians is sparse and that which is available is less than satisfactory. Some Arctic meats and fish have been analyzed for nutrient content, but these analyses are incomplete in terms of nutrients assayed and representation of species, areas of the Arctic, season, and age of animals. Usually the chemical composition of a species was based on the analysis of a single animal which was not prepared as eaten by the Inuit. Similar limitations apply to the table of chemical composition of Alaskan foods. There is no known reference of the nutrient content of indigenous foods as prepared and eaten by the Canadian Indian.

Design:

Collection of Foods: Guidelines for collection of foods consumed by Canadian Inuit and Indians are found in Appendix A and B. Supplementation to these lists is encouraged; practices of food preparation undoubtedly differ with locality. The foods collected must be as prepared and eaten by the people. Each collector will record details of the food source and its preparation on an information sheet (Appendix C). This

sheet will accompany each food specimen. Specimens will be of at least 250 grams. They will be frozen and prepared for shipping by air express. It is suggested that there be three collection centres: Inuvik, Igloolik, and Winnipeg. From these centres food will be then sent to Ottawa for analysis. The collector will reimburse the provider of the food at a fair price perhaps based on that at the local co-operative store. Whenever possible, part of the animal from which the food came will be collected for purposes of determination of age. Dr. Pruitt, Department of Zoology, University of Manitoba, has volunteered to do this.

We are in the process of training a local person in Igloolik, the focus for the Eastern Arctic, for making collections throughout a calendar year. This method would be the ideal way of establishing a procedure for complete collection in terms of species, methods of preparation, and season. The design and budget are written with this approach in mind. Food from more isolated communities will need to be obtained through the help of the nurse-in-charge and the community health worker. This has not proved to be as an effective a method of collection but the expenses of travel and field sustenance preclude an arrangement such as that in Igloolik.

The following have offered to co-operate with this project: Northern Medical Unit, University of Manitoba, and various offices of Medical Services Health and Welfare Canada. During the coming year groups in other parts of the country (eg. Saskatchewan, Alberta, Quebec) will be contacted so that Indian foods throughout Canada will be included in the collection.

The design of the investigation ie. completeness of collection in terms of species, age, location, and season, necessitates the continuation for at least another year or two.

Analyses: The Chief of the Nutrition Research Laboratories of the

Health Protection Branch has agreed that a limited number of foods can be assayed in these laboratories in Ottawa. There is perhaps no other group of laboratories in Canada that are equipped to do the diversity of analyses required in this investigation. The Chief will direct the food specimens through the various laboratories for complete analyses of the food specimens. The analyses of foods collected will include: energy, protein, lipid, vitamin D, retinol,  $\beta$  - carotene, ascorbic acid, tocopherol, thiamin, riboflavin, nicotinamide, pyridoxine, folacin, pantothenic acid, vitamin B<sub>12</sub>, iron, copper, zinc, calcium, phosphorus, magnesium, and mercury. Breakdown of protein into amino acids and of lipids into fatty acids, cholesterol, etc. will be done if sample sizes are sufficiently large and if personnel and facilities are available. There is one major constraint with respect to the analyses. Personnel in these laboratories are scientists whose primary responsibilities are their research projects and not research work of this type.

FOODS TO BE COLLECTED FOR NUTRIENT ANALYSESCARIBOU

1. From young and old animals. (Please collect a tooth for purpose of determining the age).

2. Male and female.

3. PARTS TO COLLECT:

a. muscle.

b. organs:

1. liver
2. kidney
3. heart
4. tongue

c. fat.

4. Collection of a-c should be in the following forms:

a - c: fresh frozen.

a - c: cooked, including boiled (with liquid) and fried.

a: roasted.

a: dried.

5. All 4 seasons should be represented for the fresh frozen collections and at least 1 for the cooked specimens.

Spring: April - June.

Summer: July - September.

Fall: October - December.

Winter: January - March.

This applies to the date of killing of animal - not the date of collection.

6. Areas in Arctic to be represented:

a. Western - Inuvik or Tuktoyaktuk.

b. Central - Keewatin.

c. Eastern - Igloodik

SEAL

1. From young and old animals. (Please collect a jaw - or tooth if jaw not feasible - for determination of age).
2. Male and female.
3. PARTS TO COLLECT:
  - a. muscle.
  - b. fat.
  - c. liver.
4. Collection of a - c should be in the following forms:
  - a - c: frozen and cooked (boiled, fried, roasted) and dried.
5. All 4 seasons should be represented for the fresh frozen collections and at least 1 for the cooked specimens.

Spring: April - June.

Summer: July - September.

Fall: October - December.

Winter: January - March.

This applies to the date of killing of animal - not the date of collection.
6. Areas in Arctic to be represented:
  - a. Western - Holman Island or Sach Harbour.
  - b. Eastern - Igloolik Area.

WALRUS

1. Young and old. (Please collect a jaw - or tooth if jaw not feasible - for determination of age).
2. Male and female.
3. PARTS TO COLLECT:
  - a. muscle.
  - b. fat.
4. Specimens should be fresh frozen or cooked or dried.
5. All 4 seasons should be represented for the fresh frozen collection and at least 1 for the cooked specimens.

Spring: April - June.

Summer: July - September.

Fall: October - December.

Winter: January - March.

This applies to the date of killing of animal - not the date of collection.

6. Areas in Arctic to be represented:
  - a. Eastern - Igloolik area.

WHALE

1. From young and old. (Please collect an ear plug for purposes of determining the age).
2. Male and female.
3. PARTS TO COLLECT:
  - a. muktuk.
  - b. heart.
  - c. muscle.
4. Collections of a - c should be:  
muktuk and heart: fresh frozen and cooked and dried.  
muscle - raw (frozen).
5. Areas in Arctic to be represented:
  - a. Western - Tuktoyaktuk.
  - b. Central - Whale Cove.
  - c. Eastern - Igloolik.

POLAR BEAR

1. Young and old. (Please collect a tooth for purposes of determining the age).
2. Male and female.
3. PARTS TO COLLECT:
  - a. muscle.
  - b. fat.
4. Specimens should be fresh frozen and cooked.
5. All 4 seasons should be represented for the fresh frozen collection and at least 1 for the cooked specimens.

Spring: April - June.

Summer: July - September.

Fall: October - December.

Winter: January - March.

This applies to the date of killing of animal - not the date of collection.

6. Areas in Arctic to be represented:
  - a. Eastern - eg. Grise Fjord.  
Igloolik.



CHAR and LAKE TROUT

1. PARTS TO COLLECT:

a. muscle.

b. liver.

2. Collection should be in frozen and cooked forms and dried.

3. All 4 seasons should be represented for the fresh frozen collections and at least 1 for the cooked specimens.

Spring: April - June.

Summer: July - September.

Fall: October - December.

Winter: January - March.

This applies to the date of killing of animal - not the date of collection.

4. Areas in Arctic:

Mainly from Central Arctic.

BIRDS and BIRD EGGS

1. Please collect wing for determination of age.
2. Male and female.
3. Birds:
  - a. duck.
  - b. geese.
  - c. ptarmigan.
4. PARTS TO COLLECT:
  - a. muscle.
  - b. organs.
  - c. eggs - seagull, duck.
5. Collection should be in fresh frozen and cooked.
6. Areas of Arctic:

Wherever possible.

Samples to be Collected in Repulse Bay N.W.T.

Caribou

	Muscle	Liver	Kidney	Heart	Tongue	Fat	Head <small>parts</small>	Stomach
Raw								
Boiled								
Dried								
Fried								
Roasted								

Seal

	Muscle	Liver	Kidney	Fat	Intestines	Head	Stomach
Raw							
Boiled							
Dried							

Nutrus

	Muscle	Fat
Raw		
Boiled		
Dried		

Polar Bear

	Muscle	Fat
Raw		
Boiled		

Seagull

	Eggs
Raw	
Boiled	
Fried	

Whale

Beluga

	Muktuk	Fat
Raw		
Boiled		

Narwhale

	Muktuk	Fat
Raw		
Boiled		

Bowhead

	Muktuk	Fat
Raw		
Boiled		

Duck

	Muscle	Head	Raw	Fat
Raw				
Boiled				
Fried				

Arctic Char

	Muscle	Head	Liver
Raw			
Boiled			
Roasted			
Dried			
Fried			

Lake Trout

	Muscle	Head	Stomach
Raw			
Boiled			
Roasted			
Fried			
Dried			

Loose

	Muscle	Head	Heart	Eggs
Raw				
Boiled				
Dried				

Pfarmigan

	Muscle	Head	Heart	Eggs
Raw				
Boiled				
Dried				
Fried				

- availability → Repulse Bay

Winter (Jan. - March)

- caribou
- seal
- polar bear
- char
- lake trout
- ptarmigan

Spring (April to June)

- caribou
- seal
- char
- lake trout
- geese
- ptarmigan
- seagull eggs
- duck

Summer (July to September)

- caribou
- seal
- walrus
- whale
- char
- lake trout
- geese
- ptarmigan
- seagull eggs
- duck

Fall (Oct. - Dec.)

- caribou
- seal
- walrus
- polar bear
- char
- lake trout
- ptarmigan

Samples to be Collected in Whale Cove N.W.T.

Caribou

	Muscle	Liver	Kidney	Heart	Tongue	Head	Fat
Raw							
Boiled							
Roasted		X	X	X	X	X	
Fried		X	X	X	X	X	
Dried		X	X	X	X	X	

Seal

	Muscle	Liver	Fat	Intestines
Raw				
Boiled				
Roasted				X
Fried				X
Dried				X

Rabbit

	Muscle
Raw	
Boiled	
Roasted	

Walrus

	Muscle	Fat	Heart
Raw			
Boiled			
Fried	X	X	

Polar Bear

	Muscle	Fat
Raw		
Boiled		

Whale

	Muktuk
Raw	
Boiled	

Seagull

	Eggs
Raw	
Boiled	
Fried	
Scrambled	

Arctic Char

	Muscle	Liver
Raw		
Boiled		X
Roasted		X
Fried		X
Dried		X

Lake Trout

	Muscle	Liver
Raw		
Boiled		X
Roasted		X
Fried		X

Ptarmigan

	Muscle	Gizzard
Raw		
Boiled		
Roasted		

Duck

	Muscle	Gizzard	Eggs
Raw			
Boiled			
Roasted			X
Fried	X	X	
Scrambled	X	X	

Goose

	Muscle	Gizzard	Eggs
Raw			
Boiled			
Roasted			X
Fried	X	X	
Scrambled	X	X	