

Cost of Food at Home for a Week in Alaska: December 2000

21 Communities Surveyed

Up to three stores in each of 21 communities were surveyed during December of 2000 for the cost of a specific set of food and non-food items. The 104 food items selected were taken, with some modification, from the USDA Low-cost Food Plan which is itself based on a nationwide survey of eating habits of Americans, conducted in 1977-78. In addition, the costs of such items as water, propane and electricity were collected. All costs were adjusted to reflect local sales tax where applicable.

The estimated prices of unavailable food items in various communities were calculated as the expected cost as judged from the prices of all available items relative to the price of those items in Anchorage. The percent of foods unavailable in each community are shown in the survey.

Weekly food consumption rates for a family of 4, children 6 - 11 years, form the basis of the expressed food costs. All other costs are ratios of that cost as calculated from the USDA Cost of Food at Home survey issued November 2000. The cost for this family of 4 can be calculated from the table by summing the individual members. For smaller families such a sum would be too low and should be adjusted up by 20%, 10% or 5% for families of 1, 2 or 3 persons respectively. Similarly, the sum for larger families would be too high and downward adjustments of 5% and 10% are suggested for 6 and 7 or more member families. These adjustments reflect that some economies may be realized when preparing foods for larger families.

Rows 18 through 22 represent historical food costs. The Anchorage column is a comparison of present to previous Anchorage costs. Similarly the U.S. Average column represents changes in U.S. average prices. A one (1) appearing in the Anchorage column indicates that the current Anchorage cost is 1% higher now than at that date. Therefore, rising food costs are indicated by positive values. The remaining columns are each community's cost relative to Anchorage at that date. For instance, a cell containing a one (1) indicates a community that was experiencing a food cost 1% higher than Anchorage at that date.

Vitamin K

Vitamin K of plant origin (phylloquinone) is a viscous yellow oil. It is absorbed by the small intestine and distributed throughout the body along with other dietary oils and fats. Unlike most other oils, vitamin K can also be absorbed by the large intestine (hind gut). Hind gut bacterial flora such as *Escherichia coli* and *Bacillus fragilis* produce a significant amount of absorbable vitamin K (in the form of menaquinone).

It has been known since the 1930's that the role of vitamin K (as a factor in alfalfa) is related to blood clotting. It is now known to be required in the production of four separate blood clotting proteins. In particular, vitamin K is required for the production of the unique amino acid, gamma-glutamic acid (Gla). Gla is not formed, or is inadequately formed in the absence or in low levels of vitamin K. Gla binds to calcium ions, a step essential to clot formation. Consequently, inadequate dietary intake of vitamin K leads to excessive bleeding.

Forming a blood clot involves making a protein matrix and investing it with calcium ions. A similar description might be made for bone formation and diseases involving hardening of the arteries. Recently it has been found that vitamin K is intimately

involved in these processes. The smooth muscle cells of arteries form Gla containing proteins, especially in the proximity of plaques. Elevated Gla proteins may be protective by restricting the calcium ion available for hardening. In the normal process of bone maintenance, the matrix of minerals and proteins are in constant turnover. For instance the femur (thigh) bone near the knee is completely remodeled in about 6 months. Inadequate vitamin K favors the breakdown of bone tissue and therefore inadequate vitamin K may promote osteoporosis (bone weakening).

The historically recommended level of vitamin K intake is based on blood clotting times. Much more sensitive techniques for measuring the adequacy of vitamin K intake now exist based on the degree of Gla formation in the serum protein osteocalcin. Using this approach it has been found that the previously recommended levels of intake do not result in full formation of Gla in vitamin K dependent proteins. However, complete formation of Gla only occurs when vitamin K is given in levels that are essentially impossible to achieve via diet. The knowledge of the functional role of vitamin K and the related health implications are only developing.

The most recent recommendations for vitamin K intake are provided as Adequate Intakes (AI), which are higher than the previous Recommended Dietary Allowances (RDA) of 1989. Adult women and men should get 90 and 120 micrograms of vitamin K per day (found in about five and seven tablespoons of canola oil) both respectively. Table 1 shows some vitamin K values for various foods.

Vitamin K deficiency is rare in humans and is usually of concern only in newborns. The level of vitamin K is low in newborns because the vitamin is not efficiently transferred to the fetus in the uterus. Furthermore, breast milk has low levels of vitamin K and milk consumption in neonates is low. Vitamin K is routinely

administered to newborns as protection against undue bleeding. Vitamin K deficiency can occur in adults on restricted diets and who are consuming antibiotics.

In general, green plant matter such as spinach, broccoli, brussel sprouts and turnip greens are well supplied with vitamin K. Cabbage, peas, green beans and lettuce however are not. Canola, soybean and to a lesser extent olive oils contain significant amounts of this vitamin as may dairy products and liver. Hydrogenation of oils (such as hydrogenated soybean oil) significantly reduces vitamin K content. Toxicity of vitamin K is very low, especially of the plant derived phylloquinone form.

Table 1. Vitamin K content (phylloquinone) of some common foods.

Food Item	microgram/100g	Food Item	micrograms/100g
Spinach	380	Soybean oil	193
Broccoli	180	Canola oil	127
Green peas	24	Olive oil	55
Potatoes	1	Corn oil	3

References

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