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FAROE FOOD AND VETERINARY AUTHORITY

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Dietary recommendation on the consumption of pilot whale meat and blubber

In recent years, a number of studies have been conducted on contaminants in our food products and the implications their consumption have for human development and health. Expert groups under the auspices of various international bodies have assessed these studies and provided updated advice on the levels within which the intake of these substances through food is likely to be safe for human health. Recommendations have previously been related to mercury, but advice is now also available regarding dioxin and dioxin-like PCBs.

Based on this advice, the recommendations for the consumption of pilot whale meat and blubber are as follows:

- Adults should eat at most one meal[1] of pilot whale meat and blubber per month.

- Special recommendations for women and girls:
  - Girls and women should refrain entirely from eating blubber as long as they are still planning to have children
  - Women who are planning pregnancy within the next three months, who are pregnant or who are breastfeeding should refrain from eating whale meat.

- The kidneys and liver of pilot whales should not be eaten.

[1] One meal is calculated as an amount of 250 grams of meat and 50 grams of blubber (raw, unprocessed). Average human body weight 70 kg.

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Dietary recommendation on the consumption of pilot whale meat and blubber

- The basis for the recommendation

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1. Introduction

It is more than 10 years since the last dietary recommendation on pilot whale was given by the Faroese Food and Veterinary Authority, Chief Medical Officer and the head of the Department of Occupational and Public Health. In November 2008, the Chief Medical Officer and the head of the Department of Occupational and Public Health sent the Prime Minister a new recommendation that the Faroese should no longer consume whale meat and blubber.

The Faroese Food and Veterinary Authority has revised the dietary recommendation from 1998 based on the latest knowledge about the contents of contaminants in whale meat and recommendations on threshold values for these substances from expert groups under the auspices of various international bodies.

When it is a matter of risk assessment, the Faroese Food and Veterinary Authority operates according to the ground rules laid down in Act of Parliament no. 58 from 26 May 2010, on food products, etc.

The recommendation is based primarily on directives and international recommendations applied in the EU:

- Executive Order no. 147 from 1 December 2009, on setting threshold values for certain contaminants in food products.[2] (The Executive Order implements the Commission Regulation No 1881/2006 of 19 December 2006 on setting maximum levels for certain contaminants in foodstuffs).
- Recommendation from FAO/WHO, JECFA (Joint FAO/WHO Expert committee on Food Additives), on PTWI (provisional tolerable weekly intake) of Methylmercury.
- Evaluation and confirmation by EFSA (The European Food Safety Authority) of JEFCA's recommendation above. The EFSA is the scientific food product risk assessment body of the EU.
- Levels for dioxin and dioxin-like PCBs set by JECFA and EU-SCF (Scientific Committee for Food).

[2] Executive Order no. 147 from 1 December 2009, on setting threshold values for certain contaminants in food products. Applies to food production for export.

1.1 The progress of the dietary recommendations and studies

In recent years great changes have been made in the recommendations of whale meat and blubber, from once a week to twice a month, until the Faroese were recommended to give up consuming whale meat.

1977	Warning. Studies of mercury conducted. Public advised to exercise precaution in consumption of pilot whale liver. Similar situation with regard to kidneys. No risk associated with mercury in the blubber. Recommendation to limit consumption to one meal of whale meat and blubber per week (issued by Chief Medical Officer).
1981/1982	Dietary study of 331 Faroese over the age of 14 shows a consumption of about 12g of whale meat and 7g of blubber a day.
1989	Dietary recommendation on pilot whale meat and blubber. It is recommended that adults do not consume more than 100-200g of blubber a month. A piece of dried blubber measuring 10 cm long and 3 cm wide is about 100g. It is recommended that adults do not consume more than 150-200g of whale meat a week. This corresponds to only 2 large meals a month. Pregnant women ought to eat considerably less. It is recommended not to consume liver or kidneys. (The Faroese Food and Veterinary Authority, Chief Medical Officer and the head of the Department of Occupational and Public Health).
1998	Dietary recommendation on pilot whale meat and blubber. Studies of mercury and PCB. Blubber: 1-2 times a month. Girls and women should refrain entirely from eating blubber as long as they are still planning to have children. Whale meat: Women who are planning pregnancy within the next three months, who are pregnant or who are breastfeeding should refrain from eating whale meat. Organs: The liver and the kidneys of the pilot whale should not be eaten. (The Faroese Food and Veterinary Authority, Chief Medical Officer and the head of the Department of Occupational and Public Health).
2000/2001	Dietary study of 148 pregnant women shows a consumption of about 1.5g of whale meat and 0.6g of blubber a day.
2008	Recommendation to refrain from consuming pilot whale meat and blubber. Based *inter alia* on studies of adults, which indicate an increased risk of Parkinson's and cardiovascular disease. Reduced immune defence in vaccination of children (Pál Weihe, Chief Physician and Høgni Debes Joensen, Chief Medical Officer).

2. Risk Description

A description is given about contaminants in pilot whale meat and blubber and their impacts on humans. Reference is also made to assessments carried out by expert groups under the auspices of various international bodies, on food products that contain substances such as mercury and how much a person can eat without endangering their health.

2.1 Risk Identification

Contaminants found in pilot whale meat and blubber are among others: mercury, PCB, DDT, PBDE, PFAS dioxin and dioxin-like PCBs (Hoydal K. and Dam M, 2009; HFS journal no. 200800444-45).

Mercury, dioxin and dioxin-like PCBs are discussed in this dietary recommendation. The commonality for these substances is that they are contaminants and are very slowly excreted from the body. The length of time it takes for a substance to be excreted from the body is shown in half-lives. The half-life of methyl mercury is about 2 months and for dioxin (TCDD) 7½ years (Fødevare Rapport 2003:17). Like dioxin the half-lives for PCBs vary according to type but generally their half-lives are calculated in years rather than in months. (Ryan *et al.* 1993).

2.2 Effect Assessment

Over several years impact studies have been carried out, on children and adults, here in the Faroes and in New Zealand and the Seychelles.

Below is a summary of the effects on health stemming from contaminants found in for instance pilot whale meat and blubber. The summary is from the recommendation from Pál Weihe, Chief Physician and Høgni Debes Joensen, Chief Medical Officer (HFS journal no. 200800444-5).

Results so far have shown that

1. Mercury from pilot whale meat adversely affects the foetal development of the nervous system.
2. The mercury effect is still detectable during adolescence.
3. The mercury from maternal diet affects the blood pressure of the children.
4. The contaminants of blubber adversely affect the immune system so that the children react more poorly to immunizations.

Studies of Faroese children and pregnant women have been carried out over several years from 1986 to 2009. Cohort 1: 1986-87, 1022 children;Cohort 2: 1994-95, 182 children; Cohort 3 1998-00, 650 children; Cohort 4: 2000-01, 148 pregnant women; Cohort 5: 2007-2009, 490 children (Summary HFS 200800444-35).

The latest studies show that:

5. Contaminants in pilot whale appear to increase the risk of developing Parkinson's Disease in those who often eat pilot whale.
6. The risk of hypertension and arteriosclerosis of the carotid arteries is increases in adults who have an increased exposure to mercury (HFS no. 200800444-5).
7. Contaminated blubber appears to increase the risk for diabetes (Grandjean *et al.* 2011).

At present studies are being carried out to examine the fertility of the population since suspicions are that reproductive functions may be decreased because of contaminants in pilot whale meat and blubber (HFS journal no. 200800444-5).

2.3 Exposure Assessment

- The health of all those who consume too much whale meat and blubber is at risk; however foetuses and children, whose brain and nervous systems are in development, are in greater danger than adults.
- How much whale meat and blubber is eaten? Dietary studies have been carried out in 1981 and 2000.
- Dietary study in 1981-82 (n=331) showed that Faroese people ate on average 12g of whale meat and 7g of blubber a day (Vestergaard and Zachariassen, 1987; appendix 1).
- The dietary study of pregnant women in 2000-2001 (n=148) showed that on average 1.5g of whale meat and 0.6g of blubber was consumed a day (appendix 1). Of the 148 pregnant women, 30% did not eat whale meat and 60% never ate blubber, and those who did eat blubber ate this 2-6 times a year (Veyhe, A.S. 2006). The dietary study showed that pregnant women ate considerable less pilot whale meat and blubber than others. Therefore the amount of mercury in the blood of pregnant women decreased. However, the amount of PCBs was unchanged. (Cohort 5, 2007-09, HFS journal no. 200800444-35).

2.4 Threshold values for contaminants in food

The threshold values for mercury, dioxin and other substances in food have been set according to scientific evaluations of the available data. These evaluations are often made by the EU-SCF (Scientific Committee on Food) or the JECFA (Joint FAO/WHO Expert Committee on Food Additives). The threshold limits are set according to information available on the concentrations of contaminants in e.g. fish, and with regard to keeping the content of contaminants as low as reasonably achievable.

In Executive Order no. 147 from 1 December 2009, on setting maximum levels for certain contaminants in food products, the maximum levels in food for export are:

- Mercury in fish 0.5 or 1.0/mg/kg wet weight in certain fish species.
- Dioxin (WHO-PCDD/F-TEF) in fish 4pg/g wet weight.
- Dioxin + dioxin-like PCBs, (WHO-PCDD/F-PCB-TEF) in fish 8 pg/g wet weight.3
- Maximum levels are not set for other PCBs.

2.5 TWI: Tolerable weekly intake of selected contaminants

The JECFA and EU-SCF make calculations for the TDI (tolerable daily intake) or the TWI (tolerable weekly intake). TWI is often used for the substances which are only slowly excreted from the body, as it is the accumulated amount over a longer time that has significance for impact on health. When the TWI is set it is based on the amount shown in studies as not having a negativ impact. The amount is called NOAEL (no observed adverse effect level). The NOAEL amount is divided with a safety value, e.g. 5 or 10, according to the available data for the evaluation, before a

[3] It is WHO (1998)-PCDD/F-PCB-TEF. The sume of dioxin: 7 various Dibenzo-p-dioxins (PCDD), 10 various Dibenzofurans (PCDF) and 12 various dioxin-like PCBs: PCB non-ortho PCB77, PCB81, PCB 126, PCB169 and PCB mono-ortho PCB105, PCB114, PCB118, PCB123, PCB156, PCB167, PCB189.

TWI is set. Therefore the TWI is the amount that the scientists have calculated that a person can consume through life without risk to health.

The USA Environmental Protection Agency (US-EPA) uses the calculation of Benchmark Dose, to set a reference dose, RfD. The US-EPA used a safety factor of 10 to calculate the RfD (0.1 μg/kg body weight) for the methyl mercury from the study of Faroese children (US-EPA, 2000).

The JECFA used a safety factor of 6.4 to calculate the provisional tolerable weekly intake, PTWI, (1.6 μg/kg body weight) for methyl mercury based on studies of children from Faroes (7 years) and Seychelles (5½ years) (JECFA,2003). In Executive Order no.147 from 1 December 2009, on setting maximum levels for certain contaminants in food products, the TWI for mercury is 1.6 μg MeHg/kg body weight.

The EU Commission has called upon the EFSA (The European Food Safety Authority) to make an evaluation of the PTWI for methyl mercury of JECFA and US-NRC (same intake limit as US-EPA). The conclusion was that the European intake is close to the PTWI of JECFA and over the RfD of the US-NRC, and therefore it was recommended to study the intake of women of child-bearing age more definitively (EFSA, 2004).

A TWI is set for the total dioxin and dioxin-like PCBs, which is 14 pg TEF/kg body weight (ref. Executive Order no. 147 from 2009). The establishment was based on studies of rats and a safety factor of 9.6 (EU-SCF, the Risk Assessment of Dioxins and Dioxin-like PCBs in Food, May 2001). Based on the same studies (JECFA, 2002; FødevareRapport 2003:17), the EU-SCF came to the conclusion of 14 pg TEF/kg body weight a week, while the FAO/WHO, JECFA, came to a conclusion of 70 pg TEF/kg body weight a month.

Collected summary of recommendations

Throughout the years there have been changes in recommendations on the maximum tolerable intake of mercury, which the expert group from FAO/WHO (JECFA) in 2003 reduced from 3.3 μg/kg to 1.6 μg/kg body weight as a precaution for pregnant women and the unborn children. Whilst the environmental institute in USA, US-EPA, have recommended a much lower maximum limit at 0.7μg mercury/kg body weight (table 1). The bases for the recommendation from JECFA are the studies of children in the Faroes and Seychelles, while the recommendation from US- EPA is based on the studies of Faroese children. TWI for dioxin and dioxin-like PCBs (table 1) is one of the latest recommendations from the EU-SCF and JECFA, and it is particularly influenced by the detrimental development of male juvenile reproductive organs. (EU-SCF, 2001;JECFA, 2002;JECFA, 2003; FødevareRapport 2003:17).

Table 1. Shows a list of recommendations on the tolerable intake of MeHg (methyl mercury) and DLC (Dioxin and dioxin-like PCBs). The original recommendation are given for different time-spans and therefore the last column was made to show the weekly tolerable intake per bw (body weight).

Recommendation	Year	Tolerable intake/day or month per bw	Tolerable intake/week per bw
MeHg= Methyl mercury			
US-EPA: 0.1 μg MeHg/kg bw daily	1995,2000	0.1	0.7 μg/kg
JECFA: 3.3 μg MeHg/kg bw weekly	1972 rev.'99		3.3 μg/kg
JECFA (EFSA): 1.6 μg MeHg/kg bw weekly	Rev.2003		1.6 μg/kg
DLC=Dioxin and dioxin-like PCBs			
JECFA: 70 pg DLC/kg bw monthly	2002	70	17.5 pg/kg
SCF (EFSA): 14 pg DLC/kg weekly	2001		14 pg/kg

Several countries make assessments on what amount of contaminants can be consumed without unacceptable impacts on health. Recommendations can vary, Table 1 is an example. They can also be made up in various ways. For example the Swedish Food Administration (Svenska Livsmedelsverket) issued in 2011 a dietary recommendation on fish from the Baltic Sea. The Swedish Food Administration uses various TWI for dioxin + dioxin-like PCBs, all according to age group and gender. Dietary studies show what each group in the society eats and what the contents of dioxin and dioxin-like PCB are in the various fish depending on species, size and fishing area. The benefits of consuming fish are included in the assessment of the dietary advisory (SLV, 2011).

This assessment is based on the recommendation from FAO/WHO (JECFA, 2003), EU-SCF (2001), which is also assessed by EFSA, and these recommendations are included in Executive Order no 47 from 2009.

3. Risk Assessment

A calculation has been made, based on the international recommendation of TWI, of how much whale meat and blubber a person can consume without harmful impact on health.

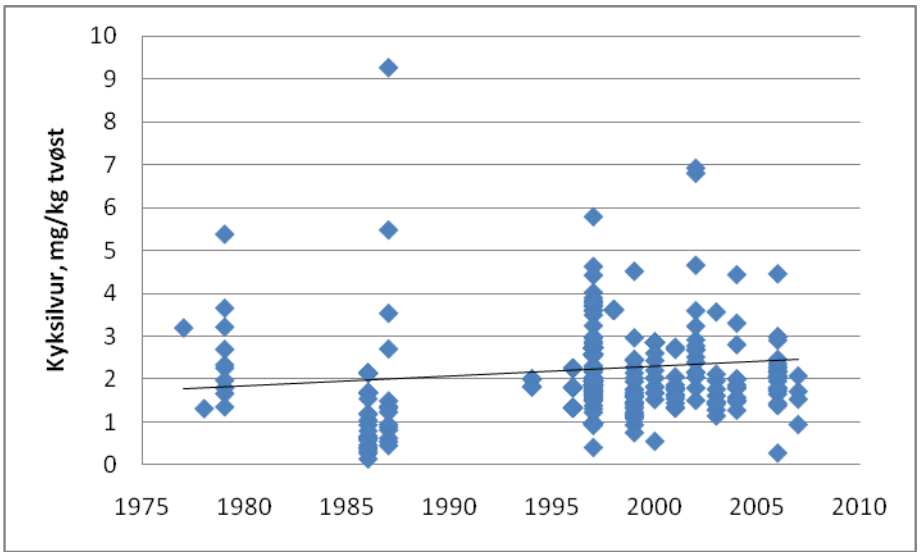
3.1 Calculations for intake of contaminants without harmful impacts on health

In order to calculate what a person can consume of pilot whale meat and blubber based on TWI it is necessary to know the content of the contaminants in whale meat and blubber.

3.1.1 Mercury

The concentration of mercury in whale meat is on average 2mg/kg wet weight, diagram 1 (Hoydal and Dam 2009, HFS journal no 200800444-8). The mercury in whale meat is nearly 100% methyl mercury, therefore the content of mercury in whale meat can be used directly to calculate the TWI in box 1 (page 12).

Figure 1. The mercury concentration in pilot whale meat from 481 female whales in the period 1978-2007, Hoydal and Dam, 2009.



In box 1 a calculation is made in order to best assess the tolerable intake of whale meat based on the recommendation used by the EU. In calculating the tolerable intake a body weight of 70 kg is used and a meal is assumed to consist of 250 g of whale meat. Whale meat should only be consumed at the most once every 4 or 5 weeks based on such calculations, when whale meat is the only source of mercury.

Over all due to mercury contamination in whale meat, it is not recommended to consume more than 250 g of whale meat 12 times a year.

3.1.2 Dioxin and dioxin-like PCBs

The recommendation has been set for the total content of dioxin and dioxin-like PCBs (DLC); but studies have in few instances only been carried out for all substances simultaneously. For example several studies have been carried out of various PCBs but these are not all dioxin-like PCBs. However the dioxin-like PCB congener PCB-118 has been studied since 1994 in about 900 whales. In 1996 blubber was studied for dioxin and dioxin-like PCBs and again in 2000, but in 2000 the monu-ortho-PCBs were not analysed.
Calculations show that the biggest portion of the combined dioxin toxicity of 85-95% stems from the dioxin-like PCBs, while dioxin (PCDD/DF) accounts for about 5-15% of the total amount of DLC (200800444-55).

An average concentration of dioxin and dioxin-like PCBs[4] in pilot whale blubber was calculated to 100 pg/g wet weight (200800444-34 and -55) and the dietary advice concerning blubber is based on this value . The recommendations from JECFA and EU-SCF were alike, and the calculations of dioxin and dioxin-like PCBs exposure due to blubber are based on those the EU has shown, ref box 2 (page 12). For the calculation a body weight of 70 kg was used and a meal of pilot whale blubber was assumed to consist of 50 g of blubber (ref. picture in appendix 2). Based on such calculations

[4] Total TEFs (WHO 2005) for dioxin (PCCD/FCDF) and PCBS non-ortho (PCB 77, PCB 126, PCB 169) PCBmono-ortho (PCB 105, PCB118, PCB123, PCB156, PCB157, PCB128/167, PCB 189). Note: 128/167 – ought to be only CB 167 but the study has given the content of CB 167 and 128, PCB-81 and PCB-114 are not studied.

blubber should only be consumed at the most once every 4 or 5 weeks, when blubber is the only source of dioxin and dioxin-like PCBs.

Over all due to the presence of contaminants in blubber it is not recommended to consume more than 50 g of blubber about 10 times a year.

3.1.3 Conclusion based on the recommendations on TWI

Based on the recommendations from the EU which are included in Executive Order no. 147 from 2009, a meal composed of 250 g of whale meat and 50 g of blubber can be consumed at most once a month.

Mercury, PCBs and other contaminants are also present in other food products, such as seabirds like fulmar. This should also be taken into consideration when making an overall assessment of the harmful effects due to mercury and other contaminants in food. In the present assessment whale meat and blubber only were considered.

Box 1: Calculation of TWI of methyl mercury:

Based on EU recommendation from 2003		
Adopted in Faroese legislation by Executive Order no. 147 from 1 December 2009, on setting threshold values for certain contaminants in food products (45, mercury).		
MERCURY:		
TWI, µg MeHg/kg body weight (2003)	1.6	µg/kg bw
Body weight, kg	70	kg
Max µg Hg per week	112	
Pilot whale meat		
Contaminant, Hg µg/g w.w	2	µg/g ww
One meal, g	250	g
Exposure µg/kg bw	7.1	
How many weeks between meals á 250g	4.5	
Most allowed meals per year	11.6	
Gram per week	56	

Box 2: Calculation of TWI of dioxin and dioxin-like PCBs :

Based on EU recommendation from 2001		
Adopted in Faroese legislation by Executive Order no. 147 from 1 December 2009, on setting threshold values for certain contaminants in food products (49, dioxin and dioxin-like PCBs).		
DIOXIN and DIOXIN- LIKE PCBs:		
TWI, pg WHO-TEQ PCDD, PCDF, dioxin-like PCBs /kg body weight	14	pg TEQ/kg bw
Body weight, kg	70	kg
Max pg TEQ per week	980	
Pilot whale blubber		
Contaminants, dioxin and dioxin-like PCBs, pg/g ww	100	pg/g ww
A meal, g	50	g
Exposure pg/kg bw	71.4	
How many week between meals á 50g	5.1	
Most allowed meals per year	10.2	
Gram per week	10	g

4. Risk control

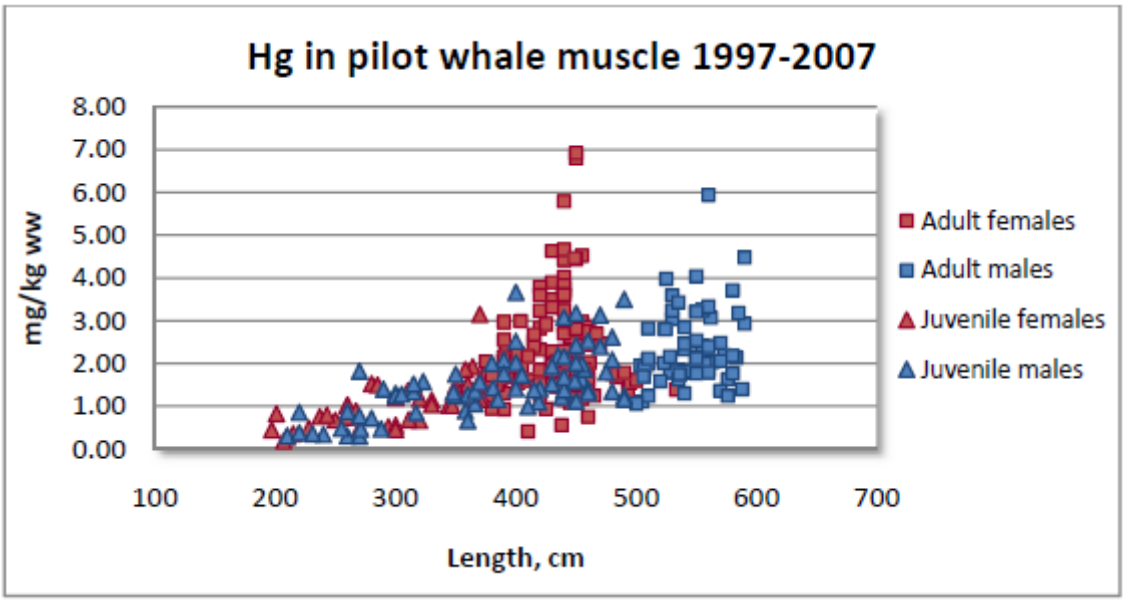
The risk of consuming food that is contaminated by mercury, PCBs and dioxin has been demonstrated but how can it be controlled? Can the risk be accepted or should initiatives be implemented to decrease the risk?

4.1. Risk reduction

The risk can be influenced by:

- A dietary recommendation directed to certain groups, such as children.
- Sorting the whale meat prior to distribution so that the older whales are not consumed, or at least not by children or young families.
- Reduced contamination (e.g. the ratification of the Stockholm POP Convention & UN/ECE LRTAP POP protocol).
- Exposure to mercury can be decreased by using the young (i.e. short) whales for food. Looking more closely at the content of mercury and the length of the pilot whale, then it becomes apparent that the smaller whales are better suited for consumption (ref diagram 2).
- Restrict the hunt of pilot whales according to the dietary advice, and change the distribution system so that the whale meat is evenly distributed throughout the country (ref. excerpt from the dietary study and pilot whale hunt below).

Figure 2. Content of mercury vs. length of pilot whale from 1997-2007 (Hoydal and Dam, 2009).

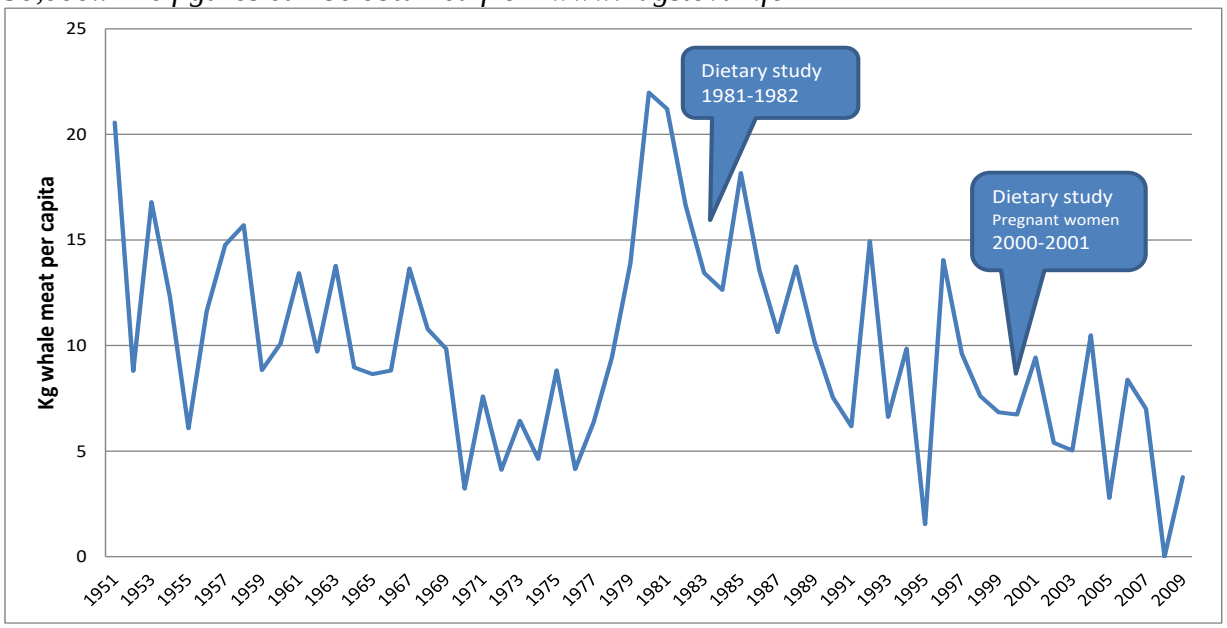


4.1.1 Calculations from dietary studies and pilot whale hunts

The 1981-82 dietary study showed that people consumed 4.4 kg of whale meat a year (12g a day) and 2.6 kg of blubber (7g a day). Based on the calculation of dietary advice regarding pilot whale meat (box 1) it is not advisable to consume more than 3 kg (0.250*12 = 3kg) of whale meat a year. Therefore it is necessary to eat less than the amount 1981-82 dietary study showed. The dietary study from 2000-01 showed that pregnant women consumed 0.5 kg of whale meat a year (1.5 g a day), this amount is less than the threshold level recommended by EU.

Upon closer study of the Statistical Bureau's survey of the annual pilot whale hunt and assume that 30,000 people consume pilot whale meat, an indication on the amount of whale meat available for consume per capita (diagram 3) can be calculated. In 1981 the available whale meat based on the number of whales taken and an average whale size was about 21 kg of whale meat per capita, whereas in 1995 the available whale meat per capita was approx. 1.5 kg and 3.8 kg in 2009. The amount of whale meat per capita available for consumption has been above and below the annual recommended amount of 3kg.

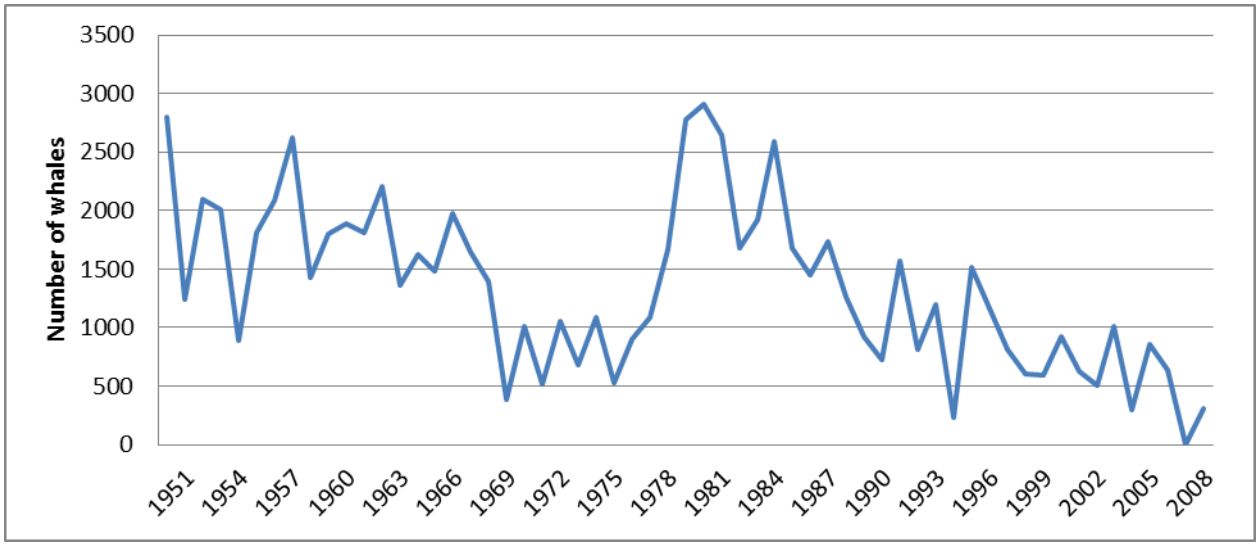
Figure 3. The amount of whale meat taken in the annual hunts depicted as mass of pilot whale meat available for consume per capita. The calculations were based on an assumed population of 30,000.. The figures can be obtained from www.hagstovan.fo



If the calculation for the annual tolerable intake is used as the basis (3kg of whale meat and 0.6 kg of blubber a year), it is possible to work out how many whales this would correspond to if 30,000 people consume pilot whale meat. If a *skinn* [5]of pilot whale on average provides 72 kg of food, consisting of 38 kg of meat and 34 kg of blubber, and the average whale is 6 *skins*, that would mean killing about 483 pilot whales a year. In Diagram 4 which shows the annual number of pilot whales hunted in the Faroes, it is seen that 228 whales were taken in 1995 and as many as 2909 in 1981. There were no whales hunted in 2008.

[5] A *skinn* is the traditional Faroese measure used to describe the size of a pilot whale in terms of amount of meat and blubber.

Figure 4. Number of whales killed in the period 1951-2009. Figures taken from www.hagstovan.fo.



4.2 Risks versus benefits

What are the benefits of eating whale meat and what are the nutritional values?

In the report Faroese Food Composition Tables from 1995 there is a table on whale meat and blubber (Poulsen M, 1995), on page 20. The nutritional table about whale meat contains values for protein, fat (saturated and poly unsaturated), carbohydrate, water, vitamins (A, B1, B2, C), minerals and trace elements (sodium, potassium, calcium, iron, zinc, selenium). Some of these data presented were acquired from studies made by the Faroese Food and Veterinary Authority, while other values were taken from the Danish and Icelandic tables The availability of nutritional data are however limited as for instance fatty acid composition was not studied.

As part of the international Arctic Monitoring and Assessment Programme, AMAP, run under the auspices of the Arctic Council, selenium has been regularly studied in whale meat, and in a selection of other species from the marine and terrestrial/freshwater environment (Hoydal and Dam, 2009).

Research is needed on, among other things, fatty acids (omega-3 fatty acid: eicosapentaenoic acid (EPA) and docosahexaenoic acid (DHA)), D-vitamin, B12 and carnitine, in order to assess more fully the nutritional valueof whale meat.

Due to the lack of information about nutritional parameters in whale meat assessment of it´s nutritional value has not been made.

5. Conclusion

Faroese research has shown that there are high concentrations of mercury, PCBs and dioxins in whale meat and blubber respectively. The average concentration of mercury in whale meat was 2.0 mg/kg wet weight and the sum of dioxin-toxicity from dioxin + dioxin-like PCBs amounted to in average 100 pg/g (WHO TEQs) blubber. These contaminants are known not the least from studies in the Faroe Islands to have harmful impacts on people's health in general and on children in particular. Studies of Faroese pregnant women show that the mercury content in the blood has decreased. This indicates that pregnant women have followed the dietary recommendation, although a similar decrease is not shown for PCBs.

The dietary study in 1981-82 shows that Faroese adults consumed about 12g of whale meat and 7g of blubber a day. While according to the dietary study from 2000-01 pregnant women consumed about 1.5g of whale meat and 0.6 g of blubber a day. There are no studies on the dietary habits of children.

There is a lack of knowledge about the nutritional value in consuming pilot whale meat and blubber, and information on important nutrients such as carnitine, fatty acids and vitamins in these foods are scarce or presently non-existent . There is also a need to carry out new dietary studies in order to be able to assess the risk for every inhabitant, and how significant other foods are in increasing the risk with e.g. mercury, PCBs and dioxin.

International recommendations from, for example, JECFA, EU-SCF, US-EPA, on how high the intake of mercury, dioxin + dioxin-like PCBs, could be without impact on health, are different and change through time. In short it can be said that regarding threshold values for contaminants exposure through food and drink i.e. the tolerable weekly intake of contaminant per body weight,– the following changes have occurred since 1998:

- PTWI for mercury was in 2003 decreased from 3.3 µg to 1.6 µg/kg b.w./week (JECFA)
- TWI for dioxin and dioxin-like PCBs was in 2001 set to 14 pg TEF/kg b.w./week (EU-SCF).

The recommendations in Executive Order no. 147 from 1 December 2009 and the EU –SCF and FAO/WHO JECFA referred to by the EU are used as the basis for the dietary recommendation. These recommendations are based on, among other things, studies of Faroese children. The latest recommendation is very similar to the previous. The Faroese are recommended to reduce the number of meals of whale meat and blubber from 1-2 times a month to once a month. In this case a meal is seen as consisting of 250 g of whale meat and 50 g of blubber. The recommendation from 1998 for girls and women remains the same: Women who are planning pregnancies within the next three months, who are pregnant or who are breastfeeding should refrain from eating *whale meat*; also girls and women of child bearing age ought to refrain from eating *blubber*.

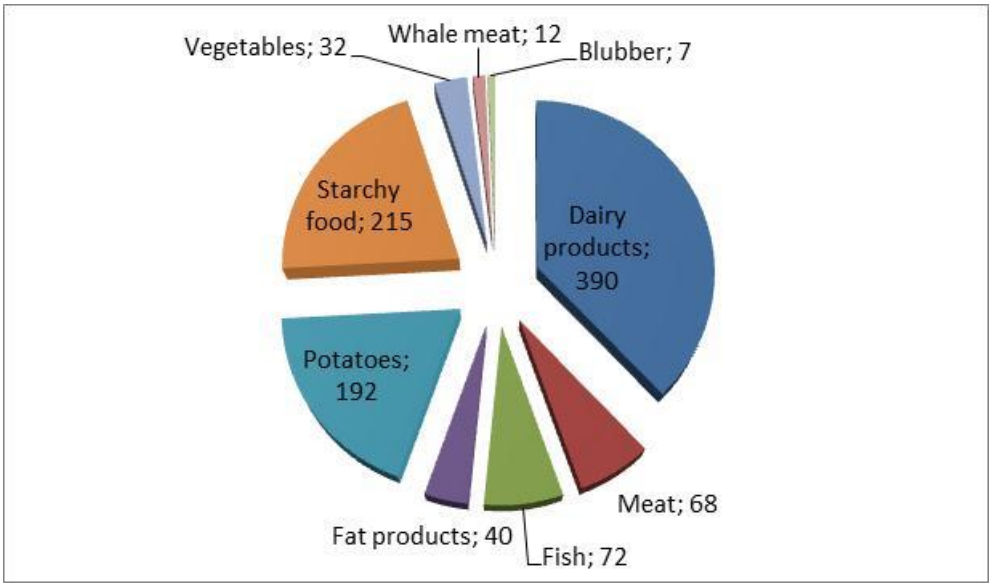
Various initiatives were looked into on how to decrease the risk from eating whale meat, by among other things adapting the whale hunt to correspond with the dietary recommendation on eating whales.

Finally it is important to bear in mind that when food products contain contaminants that are only broken down slowly, it is necessary to regularly review and update the assessments.
June 2011. The Faroese Food and Veterinary Authority

6. Appendix 1 – Dietary studies

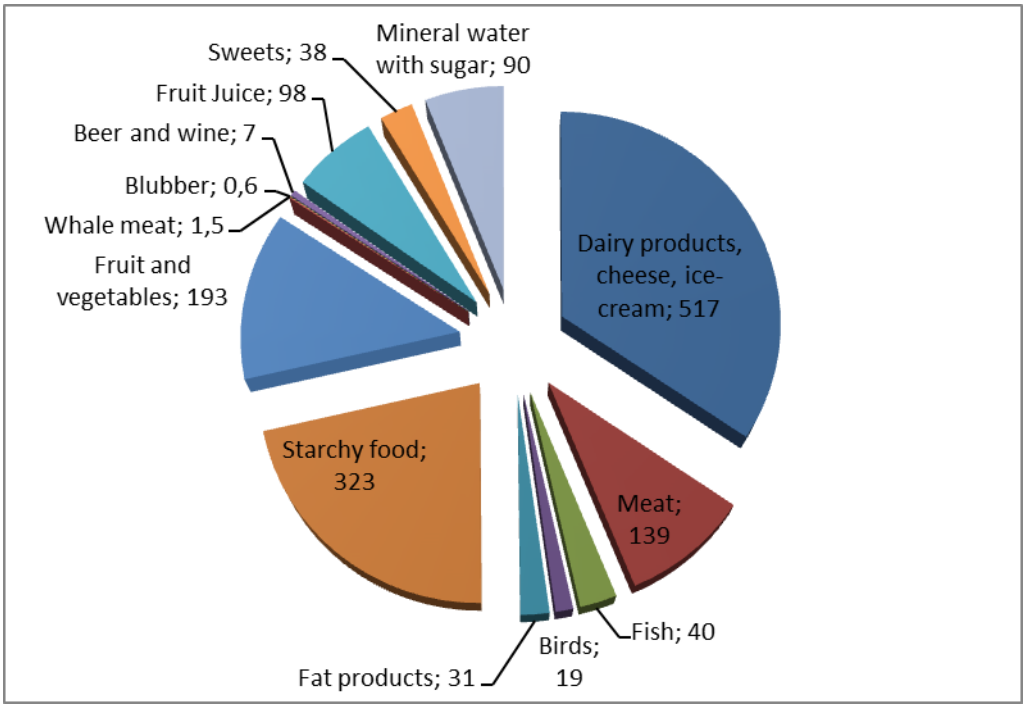
The dietary study 1981-1982

Consumption of various food groups. The daily average amount per capita (g).
Studies of 331 Faroese children older than 14 years. Source: Vestergaard and Zachariassen, 1987. Nutritional study 1981-1982. Scientific periodical 33.book (1987) 5-18.)



The dietary study 2000 – 2001

Gram per registration
Study of 148 pregnant women in 2000-2001. Source: Veyhe, A.S. 2006. Faroese women's dietary habits in the 3rd trimester of pregnancy. Nordic School for Public Health, master of Public Health 2006:10, pp 57.)



7. Appendix 2 - Pictures

The pictures show 50 g of dried blubber compared to a matchbox

8. Materials used for this report

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