

Iodine concentration in Norwegian milk has declined the last decade

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A. Haug¹, O.M. Harstad¹, E. Prestløkken¹, B. Salbu², I. Schei³, O. Taugbøl⁴

1)Department of Animal and Aquacultural Sciences, Norwegian University of Life Sciences, 1432 Ås, Norway.

2)Department of Plant and Environmental Sciences, Norwegian University of Life Sciences, 1432 Ås, Norway.

3)Tine Rådgiving, Ås, Norway

4)Norwegian Food Safety Authority, Section for Animal Health and Feed, Oslo, Norway.



INTRODUCTION

Iodine is a trace element essential for human life. Milk and milk products are the main source for iodine in the Norwegian diet. The iodine concentration in milk depends on the iodine content of the feed and on components in feed such as glucosinolates that has been shown to reduce the iodine levels in milk. The objective of the present study was to characterize the iodine concentration in Norwegian tanker milk in different geographical areas throughout the year.

CONCLUSION

The annual iodine concentration in milk in Norway has declined the last decade: in milk from the winter season the iodine concentration is almost halved and milk from the summer seasons is similar, in year 2000 compared to 2008.

The explanation is probably multi-factorial, but one reason can be the increased use of rapeseed meal in dairy diets the last decade.

MATERIALS AND METHODS

Year 2008

104 samples of tanker milk

19 milk tours, 436 farms

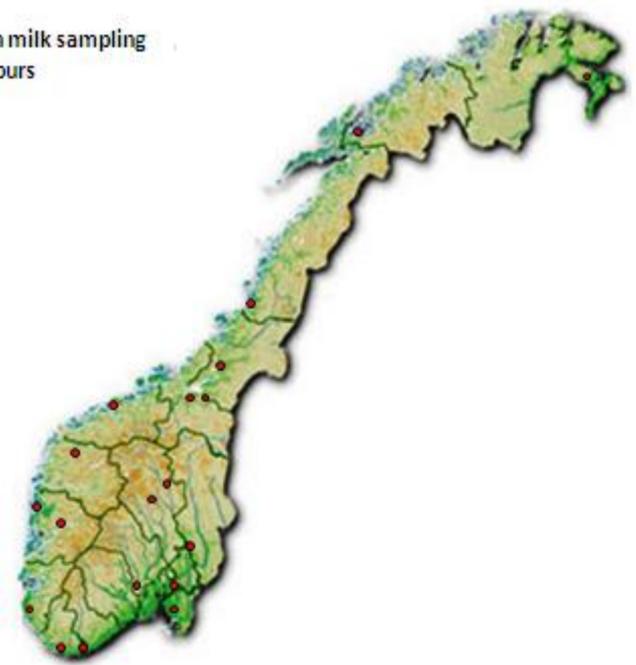
16 conventional and 3 organic tours

Six seasons throughout the year

South, East, West, Mid-North and North Norway

Iodine milk analyses: ICP-MS, Elan 6000, Perkin Elmer, (m/z 127).

Norwegian milk sampling
- 19 tank tours



RESULTS

The iodine concentration was higher during indoor feeding (winter), 125 ug/liter, than in the summer season, 91 ug/liter (Table 1). The weighed mean iodine concentration was 112 ug/liter milk (based on the assumption of about 75 % of the milk production during the winter season and 25 % during the summer season). No significant differences in the iodine concentration among milk from conventional feeding systems and organic feeding systems were found. Milk produced in the Northern part of Norway contained higher iodine levels than milk from the other geographical areas in Norway (Table 2).

Table 1. The mean iodine concentration (ug/liter) in milk in winter and summer, in year 2000 (Dahl et al. 2003) and in 2008 in Norway

	2000	2008
Winter	232	125
Summer	88	91

Table 2. The mean iodine concentration (ug/liter) in milk from conventional and organic farming systems, and in different geographical regions in Norway

Farming system	ug/liter
Conventional (n=89)	107+38
Organic (n=15)	103+52
Region	ug/liter
East (n=28)	98+35
South (n=18)	90+48
West (n=17)	105+31
Mid (n=24)	106+41
North (n=17)	139+26 ^a

^a significant difference at the 5% level

DISCUSSION

The iodine concentration in milk from the summer season 2008 is at the same level as a decade ago, but iodine in milk from the winter season has been dramatically reduced to about half during a decade. Glucosinolates are known to reduce the iodine content in milk. The increased level of rapeseed meal in the feed concentrate the last decade may have led to increased intake of glucosinolates in cows. Also, a possible shift to rapeseed products with higher levels of glucosinolates cannot be excluded. However, there may be other reasons for the decline in iodine in milk and further studies to obtain knowledge about the reduction in iodine concentration in Norwegian dairy milk during the last decade will be performed.

