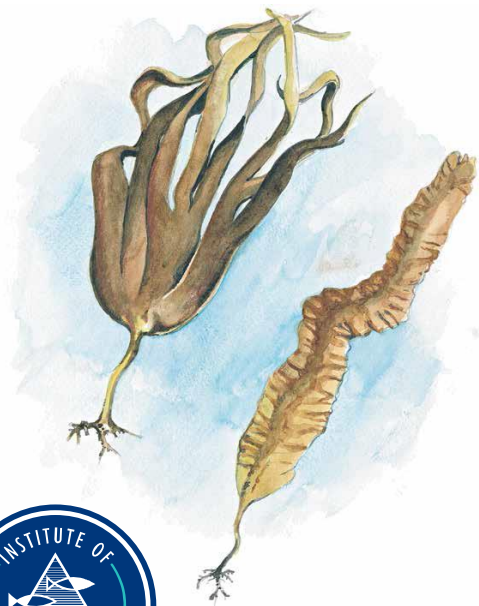




Havets grønnsaker: Næringsstoff og fremmedstoff



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Sjømat fra fjæra

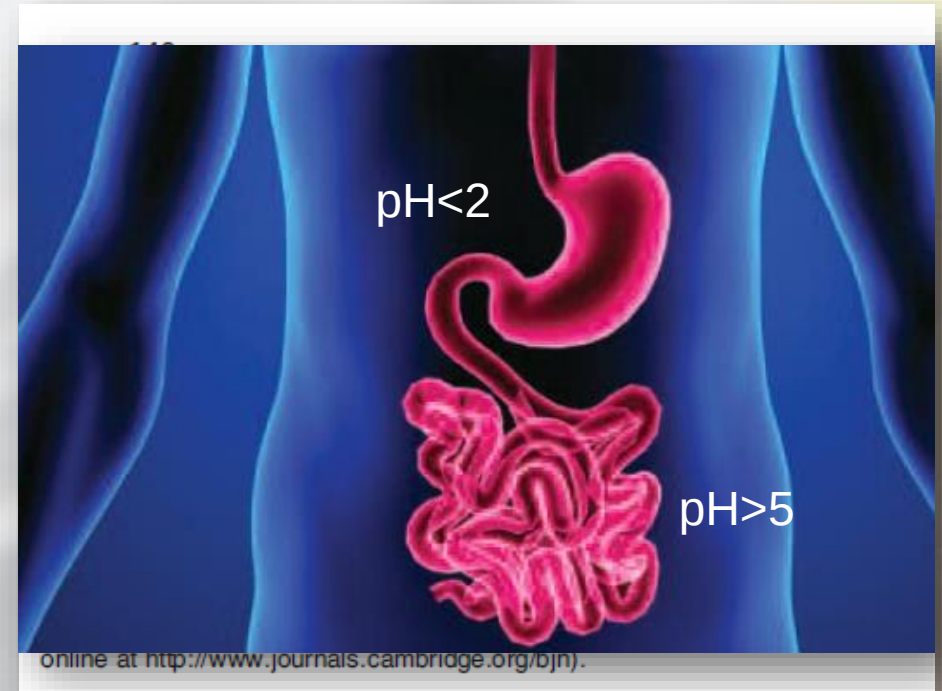


Karbohydrater

Komplekse karbohydrater:

- Fordøyes først i tykktarmen av bakterier der
- Slow release
- Tilvenning algespising
- Tarmhelse

Løselig fiber: 52-56% av totalfiber i rød- og grønnalger, 67-85% i brunalger



Mineraler og sporelement

Mer mineraler enn noen annen
matvaregruppe



Vitaminer

- Grønnsaker fra havet: Rike på vitaminer
 - Potensielt god kilde til vitamin B, provitamin A (for eksempel β -karoten), vitamin C og vitamin E
 - Sjøspagetti og fjærehinne like mye vitamin C som i tomat og salat
- Prosessering påvirker næringsinnholdet
- Vitamin B12 og biotilgjengelighet



Umami: Oppdaget i tare

1907: Japansk forsker Kikunae Ikeda identifiserte glutamin fra tarekraft og døpte smaken for umami

Smaksforsterker!

Kjenner ikke alltid smaken av taren, men alt annet smaker bedre



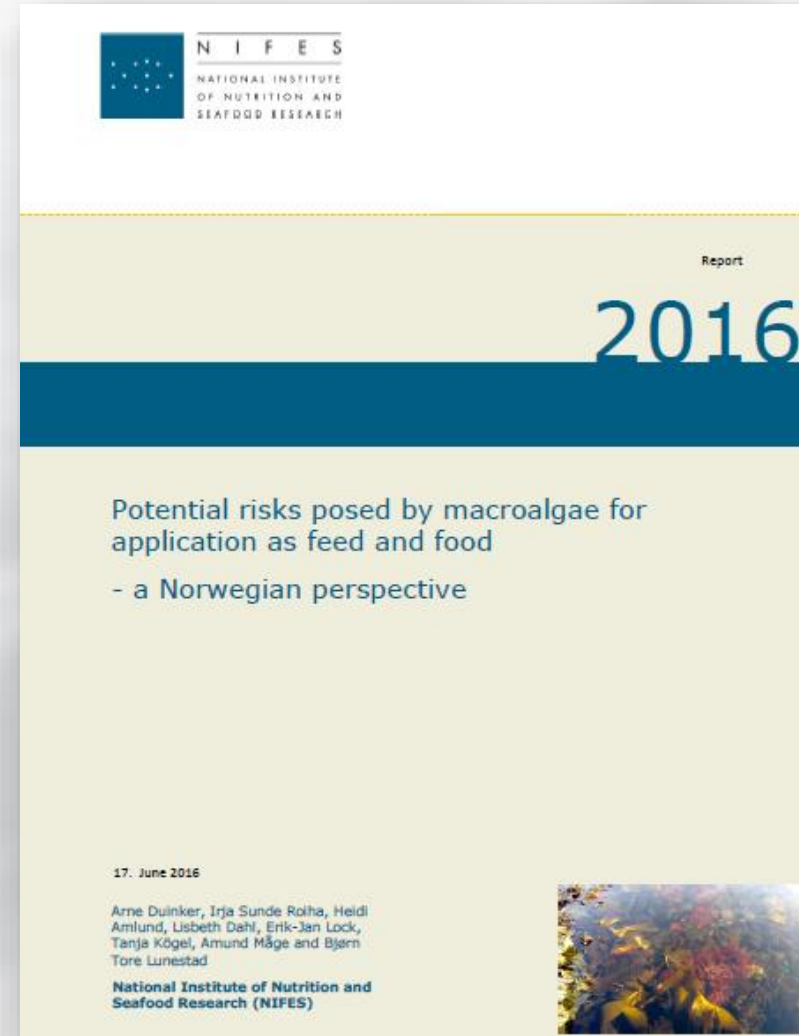
Rapport 2016

Oppdrag Mattilsynet

Jod, iAs, Cd



<https://nifes.hi.no/dette-vet-vi-om-mattrygghet-tang-og-tare/>



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COMMISSION RECOMMENDATION (EU) 2018/464

of 19 March 2018

on the **monitoring of metals and iodine in seaweed** halophytes and products based on seaweed

(Text with EEA relevance)

THE EUROPEAN COMMISSION,

Having regard to the Treaty on the Functioning of the European Union, and in particular Article 292 thereof,

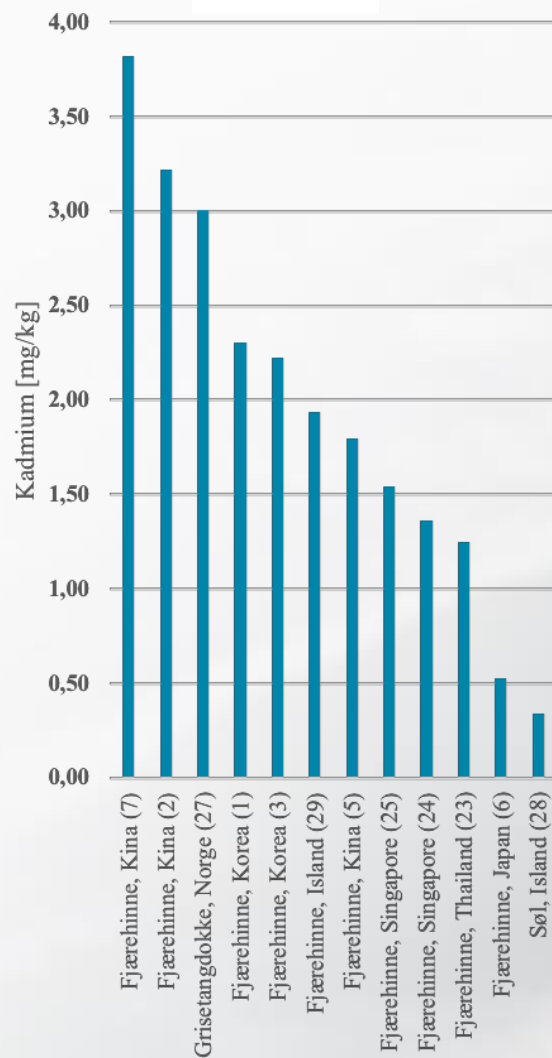
Whereas:

- (1) For arsenic, cadmium and lead, maximum levels (MLs) for various foodstuffs are established under Commission Regulation (EC) No 1881/2006 ⁽¹⁾. However, currently no MLs are established for these substances in seaweed and halophytes, except for the MLs established under this Regulation for food supplements consisting exclusively or mainly of seaweed or products derived from seaweed.
- (2) For mercury, currently under Regulation (EC) No 1831/2003 of the European Parliament and of the Council ⁽²⁾ a maximum residue level (MRL) for algae and prokaryotic organisms is established at the reference level of 0,01 mg/kg.
- (3) In 2006 the Scientific Committee for food established an upper limit for iodine intake of 600 µg/day for adults and of 200 µg a day for children of 1-3 years ⁽³⁾. It indicated that the ingestion of iodine-rich algal products, particularly dried products, can lead to dangerously excessive iodine intakes, if such products contain more than 20 mg iodine/kg dry matter and the exposed population lives in an area of endemic iodine deficiency.
- (4) Available occurrence data show that seaweeds contain significant concentrations of arsenic, cadmium, iodine, lead and mercury. As halophytes also grow in a marine environment, it can reasonably be assumed that they will show a similar uptake pattern of these substances and by consequence a similar contamination pattern.

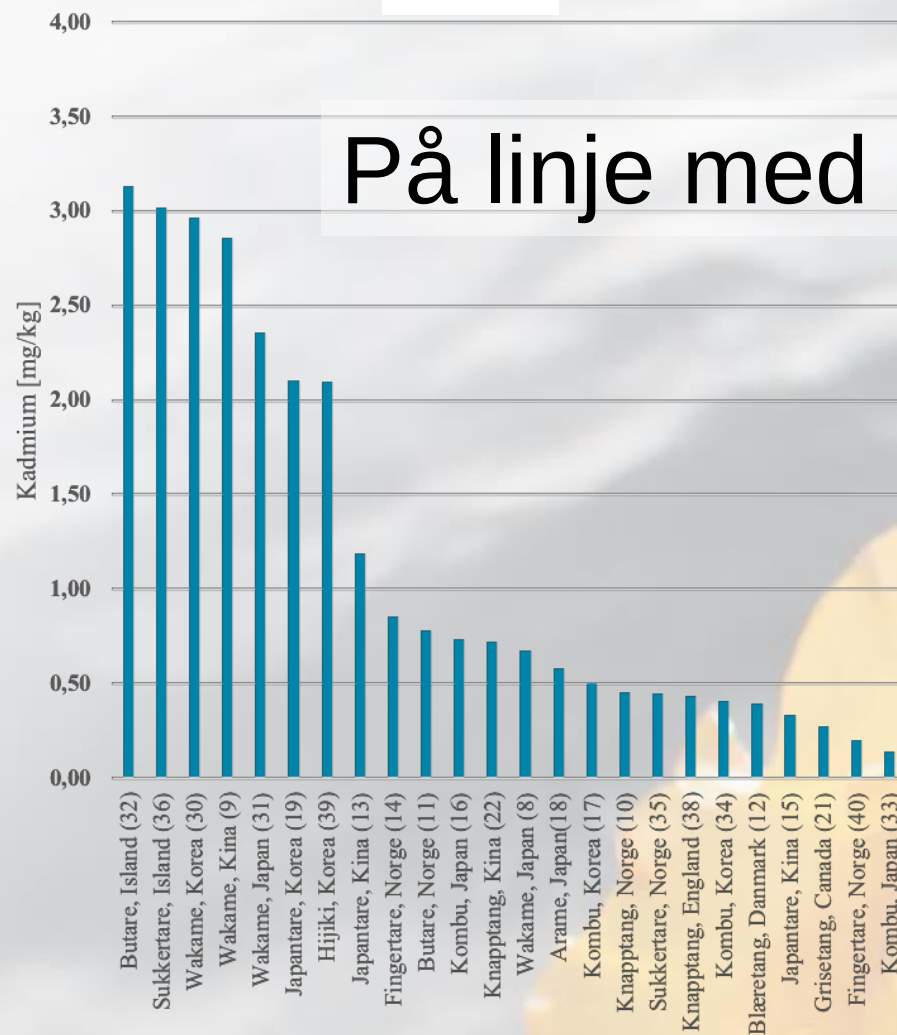


Kadmium (eksempler tørkede produkter)

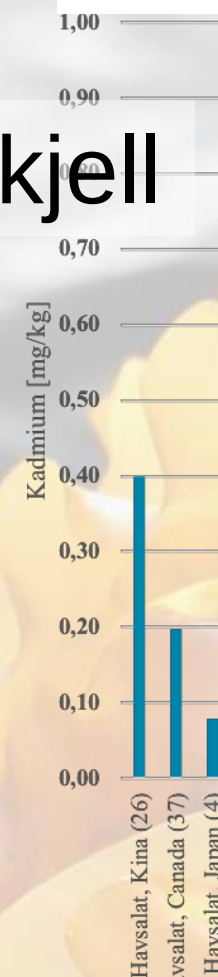
Red



Brown



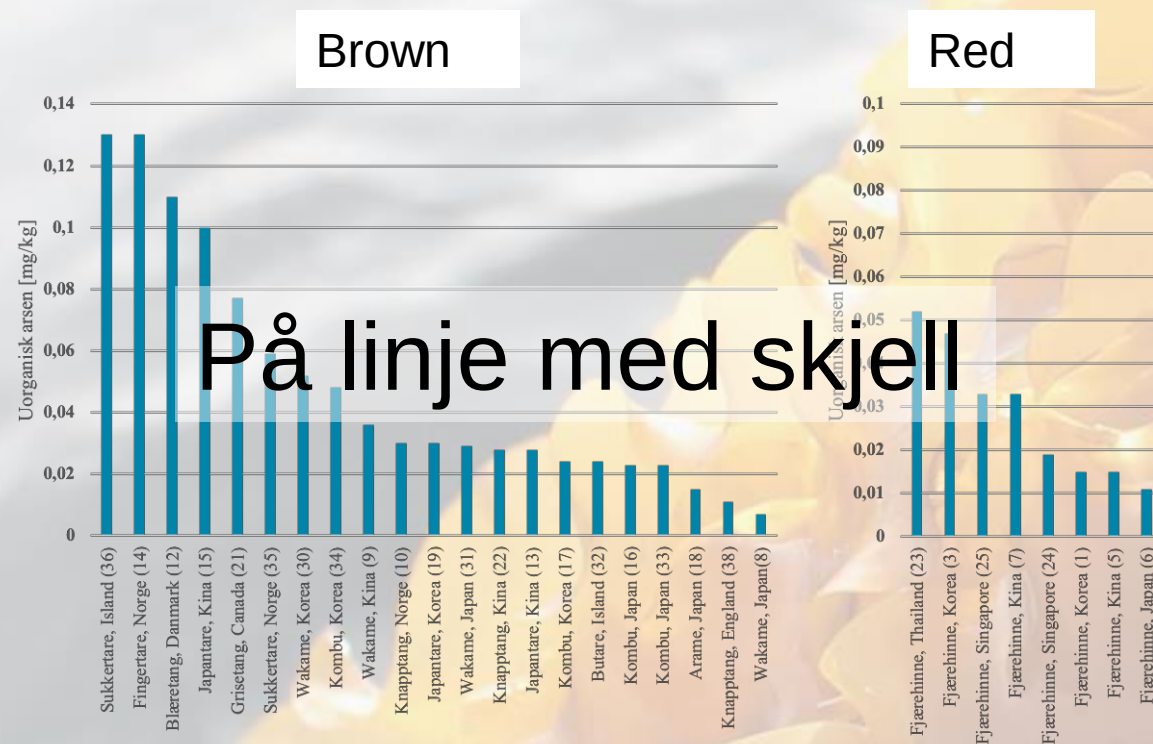
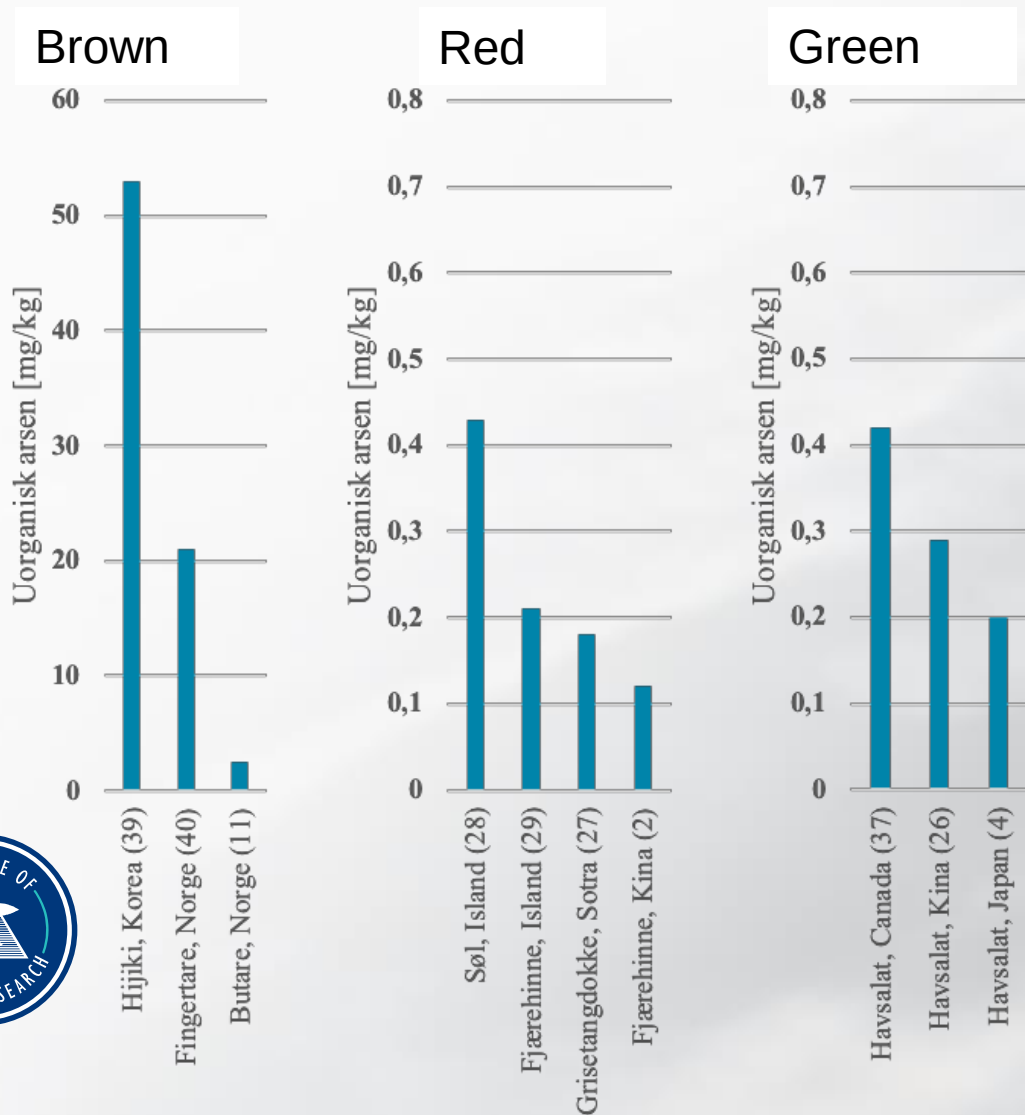
Green



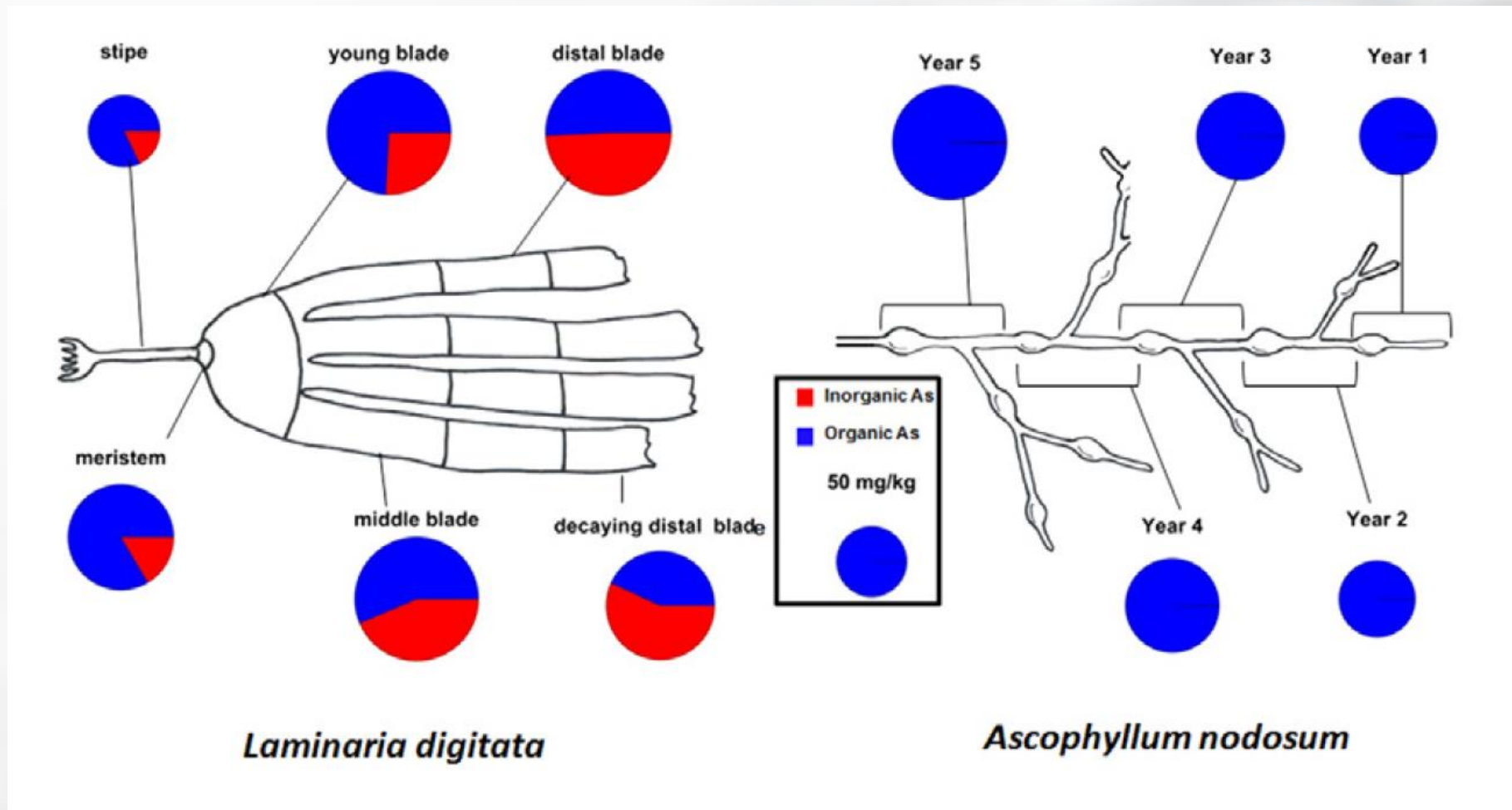
På linje med skjell



Uorganisk arsen (tørkede produkter)



Uorganisk arsen



Geografisk variasjon

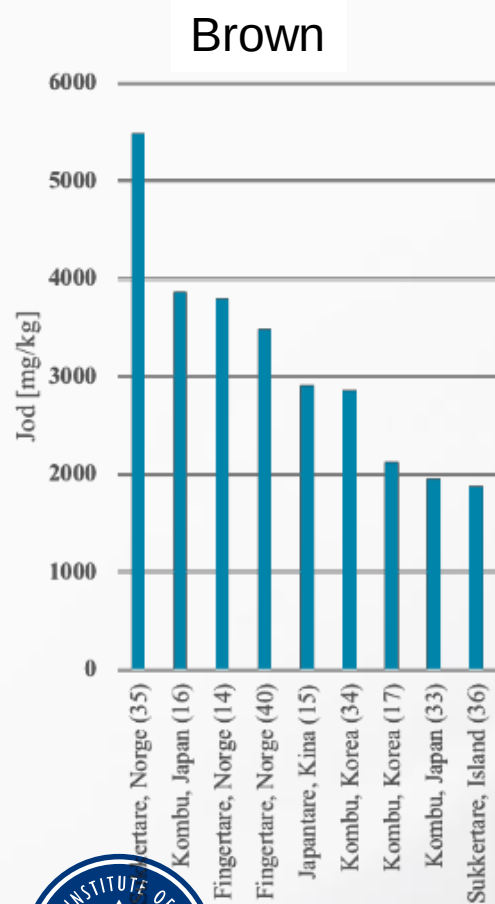


Jod i alger

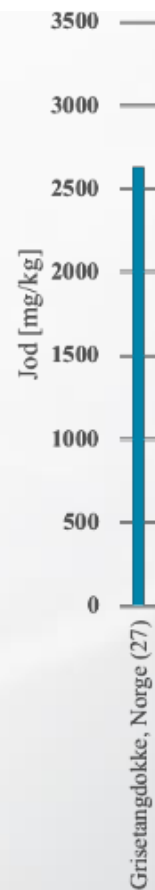
- Fisk god kilde: 30-3500 $\mu\text{g}/\text{kg}$ ww
- Brunalger 100-1000x
- Øvre tolerabelt inntak 600 $\mu\text{g}/\text{dag}$ for voksne (EFSA, 2006) → 1 g fersk tare
- Minimum 150 $\mu\text{g}/\text{dag}$
- Tyskland og Nederland ber om data som grunnlag for grenseverdier
- EFSA anbefaler overvåkningsprogram



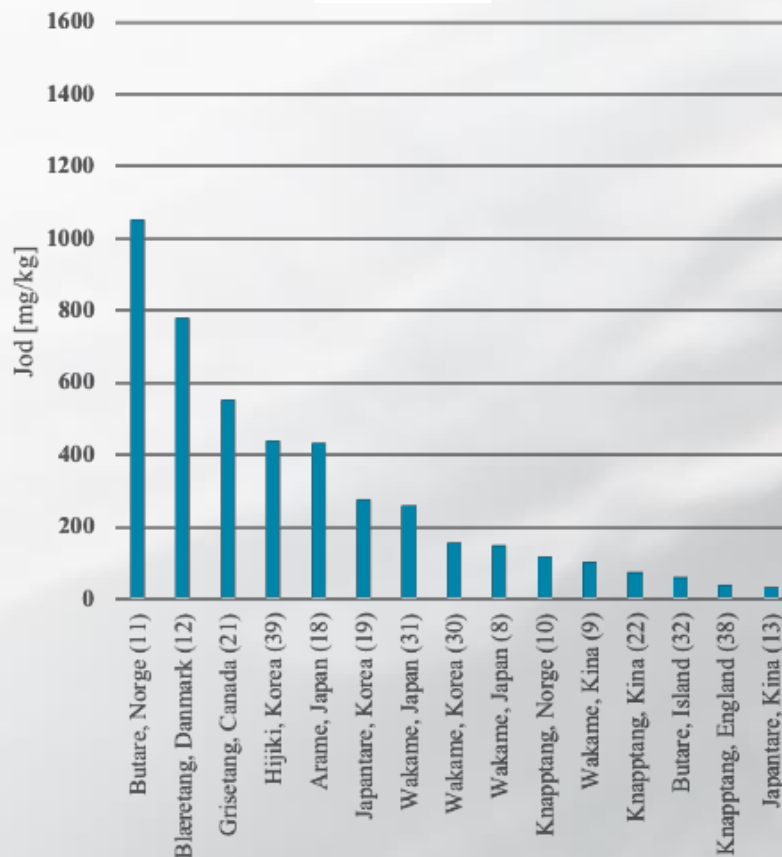
Jod (tørkede produkter)



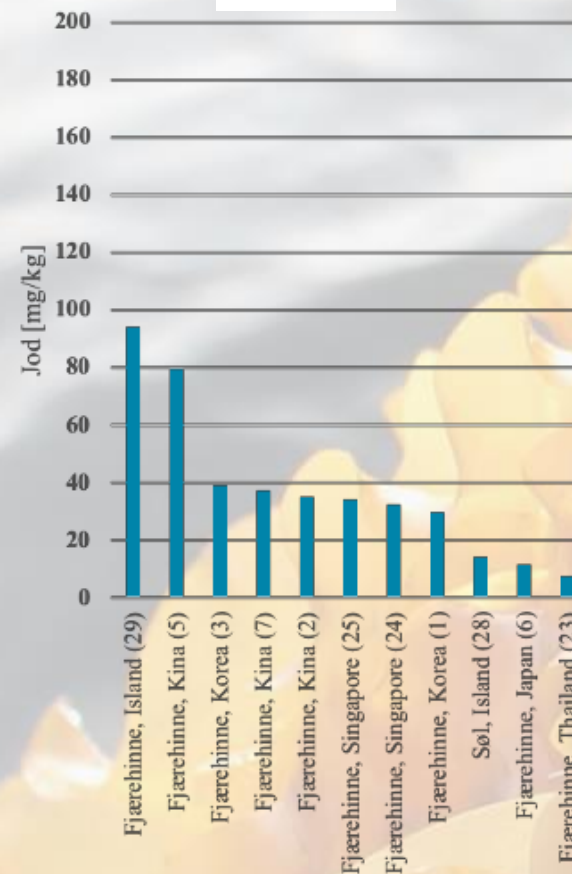
Truffle



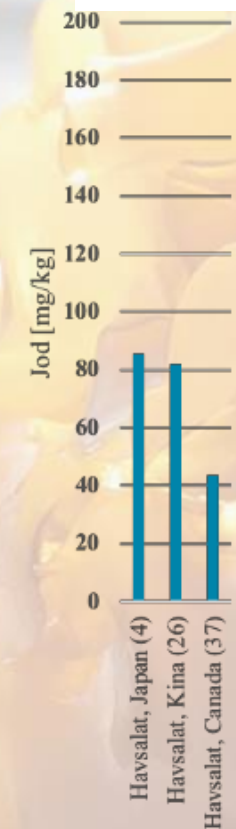
Brown



Red



Green





150 μ g



600 μ g



Jod og helse

Høyt jod i alger $\longleftrightarrow$ lav jodstatus i Europa

anbefalt daglig inntak 150 μg $\longleftrightarrow$ maks. Daglig inntak 600 μg
(Europa)

Må få diskusjoner om mekanismer og effekter

Klart standpunkt til hvordan tare kan benyttes her

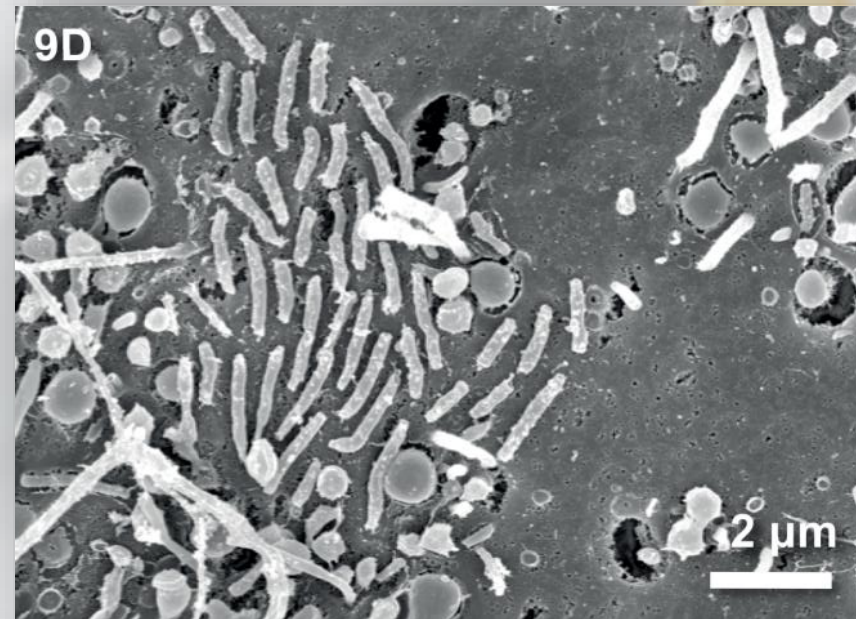
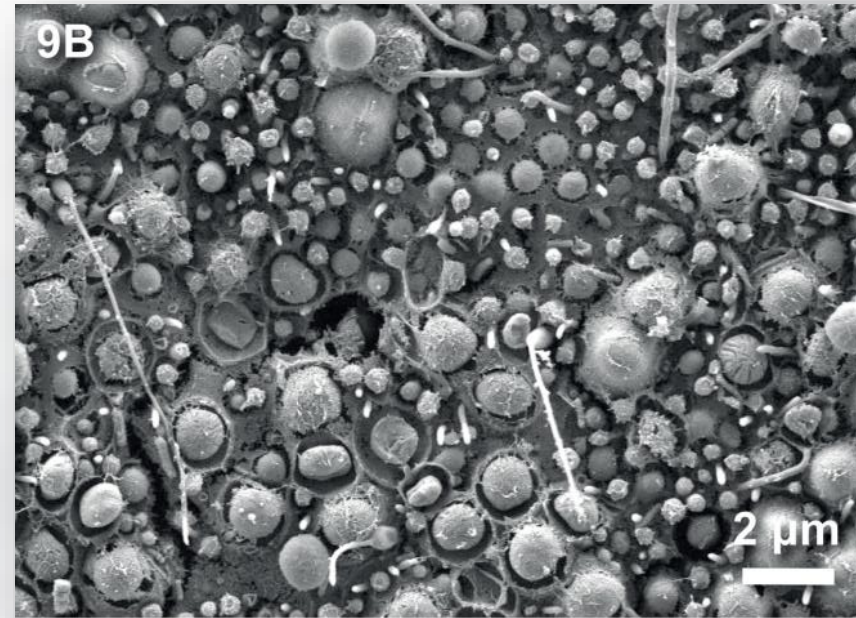
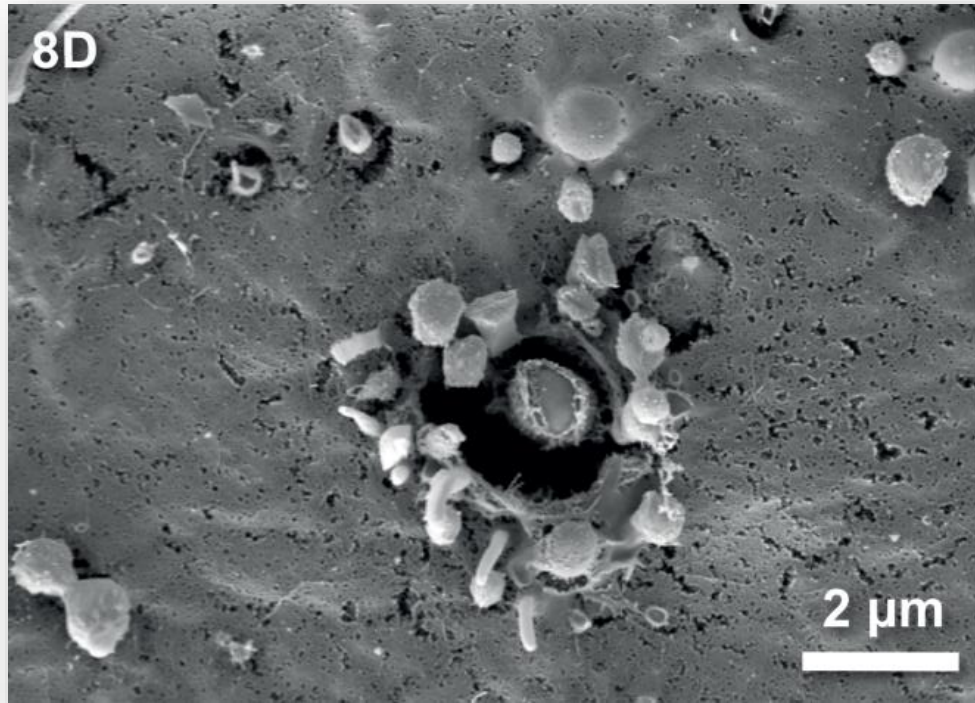


Mikrobiologi

- Krav om dokumentasjon av tarmbakterier e. coli for økologisk høsting
 - Er dette en reell risiko?
- Har dokumentert fravær av patogene bakterier fra produksjonslokalitet.
 - Eksponert lokalitet?



Mikrobiologi



Malin Bengtsson thesis

