



Thora Valsdottir

Matís & Macroalgae

Alget II – Webinar - 05.11.20



Matís Food & Biotech

Independent R&D company with a leading role in food and biotechnology research in Iceland

- **Enhance innovation in the food and biotechnology industry**
- **Increase value of consumer products**
- **Food safety and quality**
- **From basic research to commercial applications**
- **Contract research**



First anda last name

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Matís Food & Biotech

Find and define novel bioactive compounds and ingredients with subsequent development and marketing

Macro algae as a source of valuable compounds

- ✦ **Food**
- ✦ **Feed**
- ✦ **Nutraceuticals**
- ✦ **Cosmetics**



Bioactive compounds in Icelandic nature

Proteins

Peptides

Fatty acids



Polysaccharides

Polyphenols

Monosaccharides



Secondary metabolites

Enzymes

Trace elements



The macro algae projects at Matis

MacroCascade

Alget 2

SEAntiDIABETES

Increased value of seaweed processing

SEACH4NGE

Novel antioxidants from Icelandic marine sources

Novel saccharides

Bioactive oligosaccharides from Icelandic seaweed

New bioactive skincare products

Natural skin protection from the ocean

BioActive Seaweed Ingredients

Dulse: distribution, growth and utilisation

MINERVA

EnRichMar

Marine protein processed from fish and seaweed

BIOTRANSPORT

PROMAC

Edible Seaweed for Taste Enhancement and Salt Replacement

MacroValue

New natural antioxidants from Icelandic marine sources

Macroalgal Biorefinery

Nutraceuticals from Icelandic seaweed

Nordic Algae Network

Development and production of natural antioxidants from Icelandic *Fucus vesiculosus*

NUTRIS

Novel bioactive seaweed based ingredients and products

Cultivation of sugar kelp for human consumption

Ecological impact on bioactive chemicals in brown seaweeds and their utilization

TASTE

Bioactive saccharides from seaweed

MacroFuels



First and last name

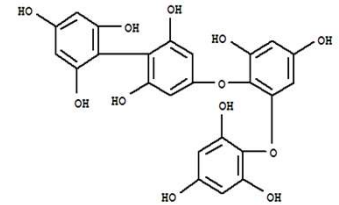
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Cultivation of klóblaðka with the aim of covering bioactive substances

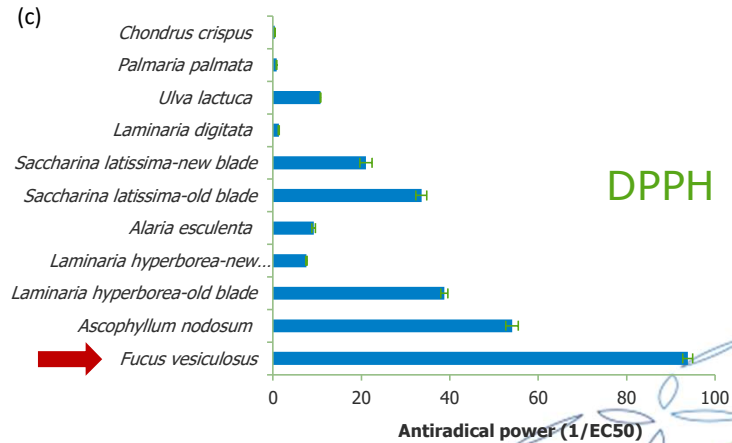
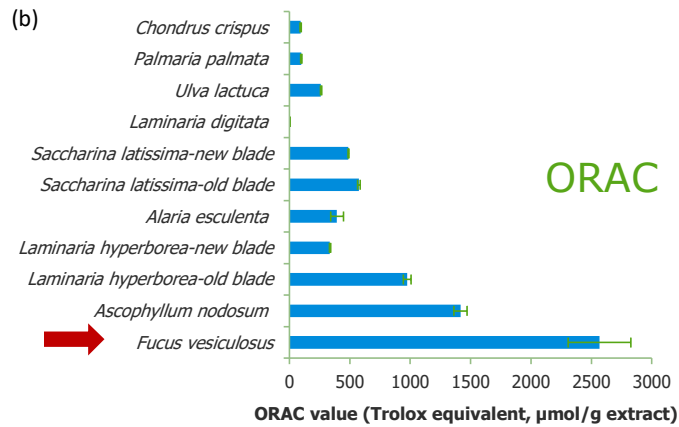
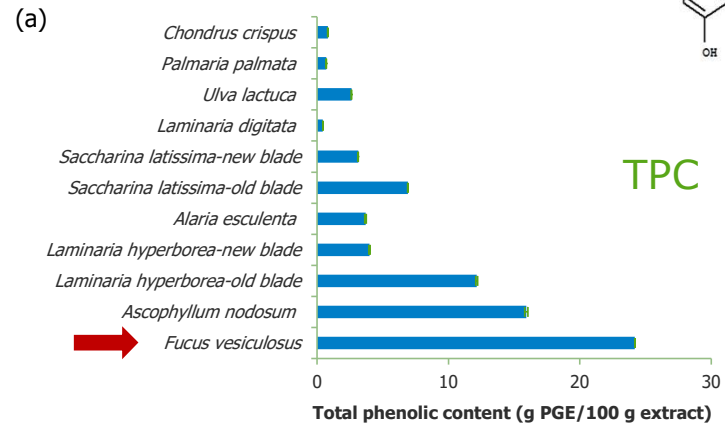


Bioactivity of Icelandic seaweed

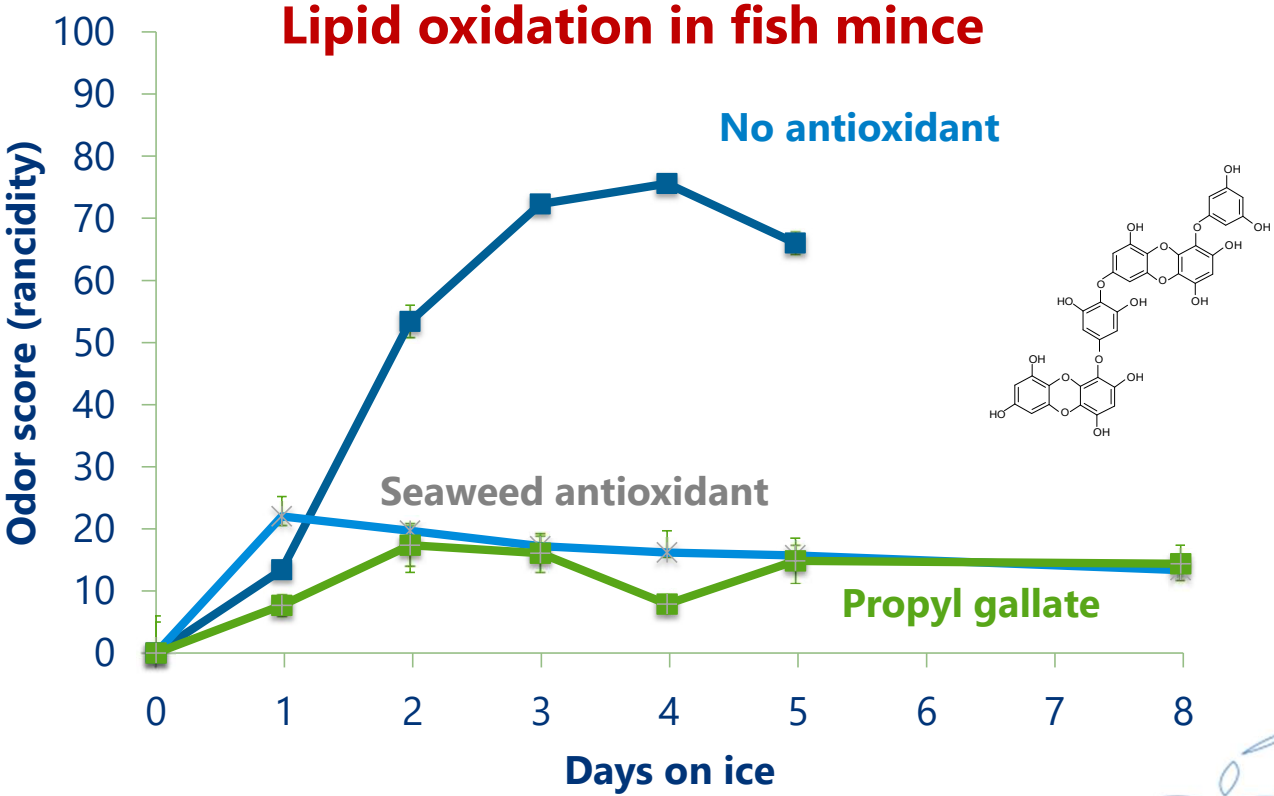
Antioxidant activity confirmed by extensive research on 10 species of Icelandic macro algae



TPC



Seaweed phlorotannin antioxidants



Wang et al. 2009. Inhibition of haemoglobin-mediated lipid oxidation in washed cod muscle and cod protein isolates by *Fucus vesiculosus* extract and fractions. Food Chemistry. 123, 321-330.



In vitro research confirms *F. vesiculosus* extract:

Unique bioactive ingredient
from Icelandic algae

Excellent natural source of
antioxidants

Anti-diabetic activity



Anti-inflammatory and anti-bacterial

Improves elasticity and
collagen production

Moisturizing and nourishing



Seaweed bioactive ingredients *F. vesiculosus*



Successful product development

- ✦ new product line of rye products
- ✦ encapsulated seaweed extract
 - Iodine and metals below limits
 - Verification of bioactivity (TPC, antioxidant activity and α -glucosidase activity) for up to 18 months at RT



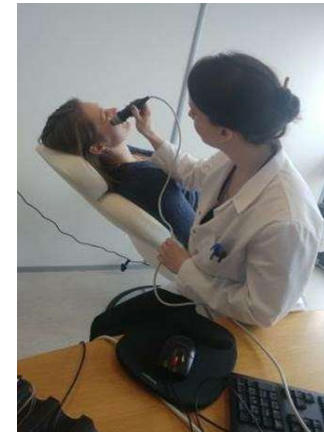
Seaweed bioactive ingredients (with verified in-vivo bioactivities)



- ✓ A significant improvement of glucose metabolism
- ✓ Positive impact on the skin of the participants

The results obtained made the next steps possible:

- ✓ Marketing, commercialisation and increased value of the end products



Effect of environmental factors on polyphenols, polysaccharides and inorganic trace elements in brown seaweed

Species

Alaria esculenta

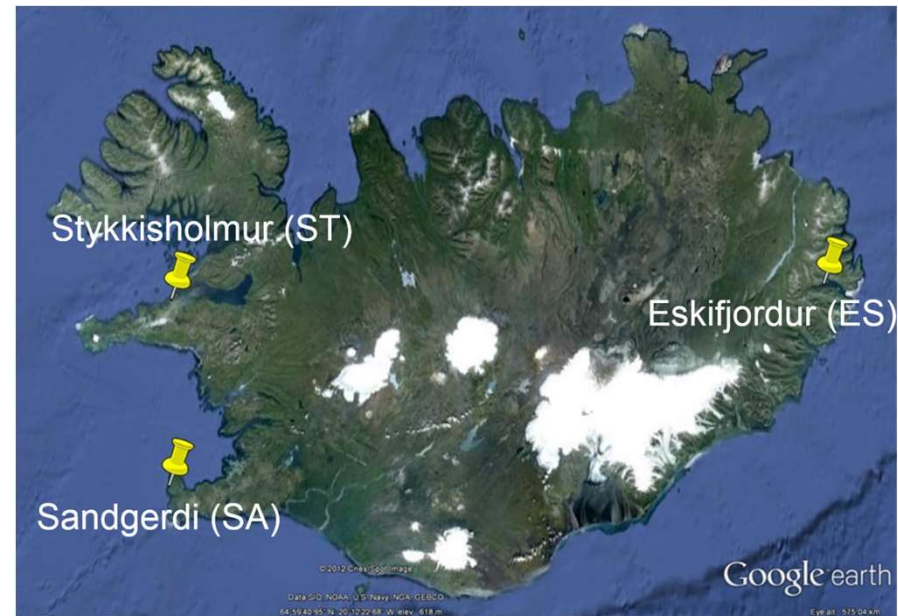
Ascophyllum nodosum

Fucus vesiculosus

Saccharina latissima

Time

March, April, May, July, August, October

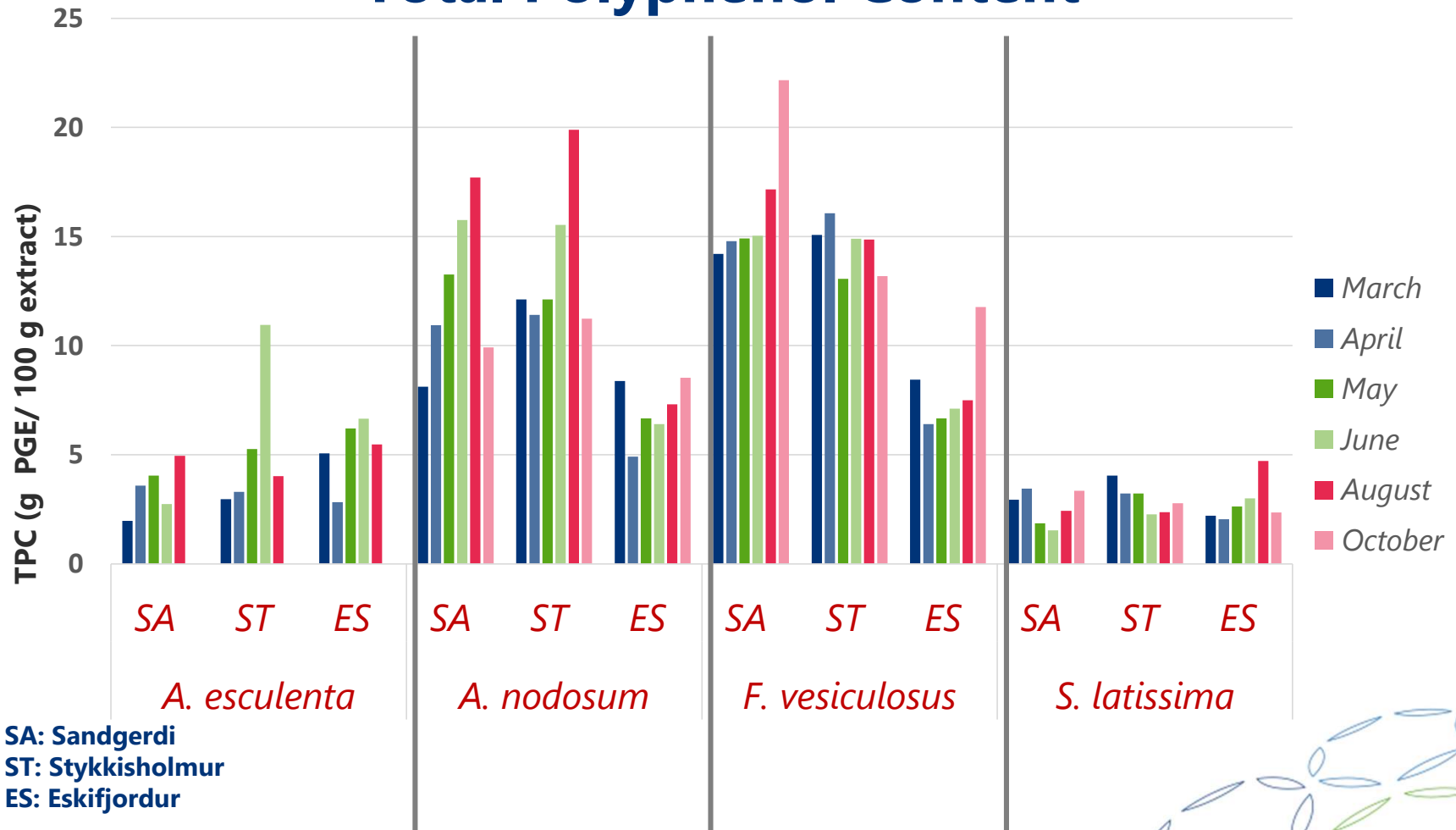


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Total Polyphenol Content

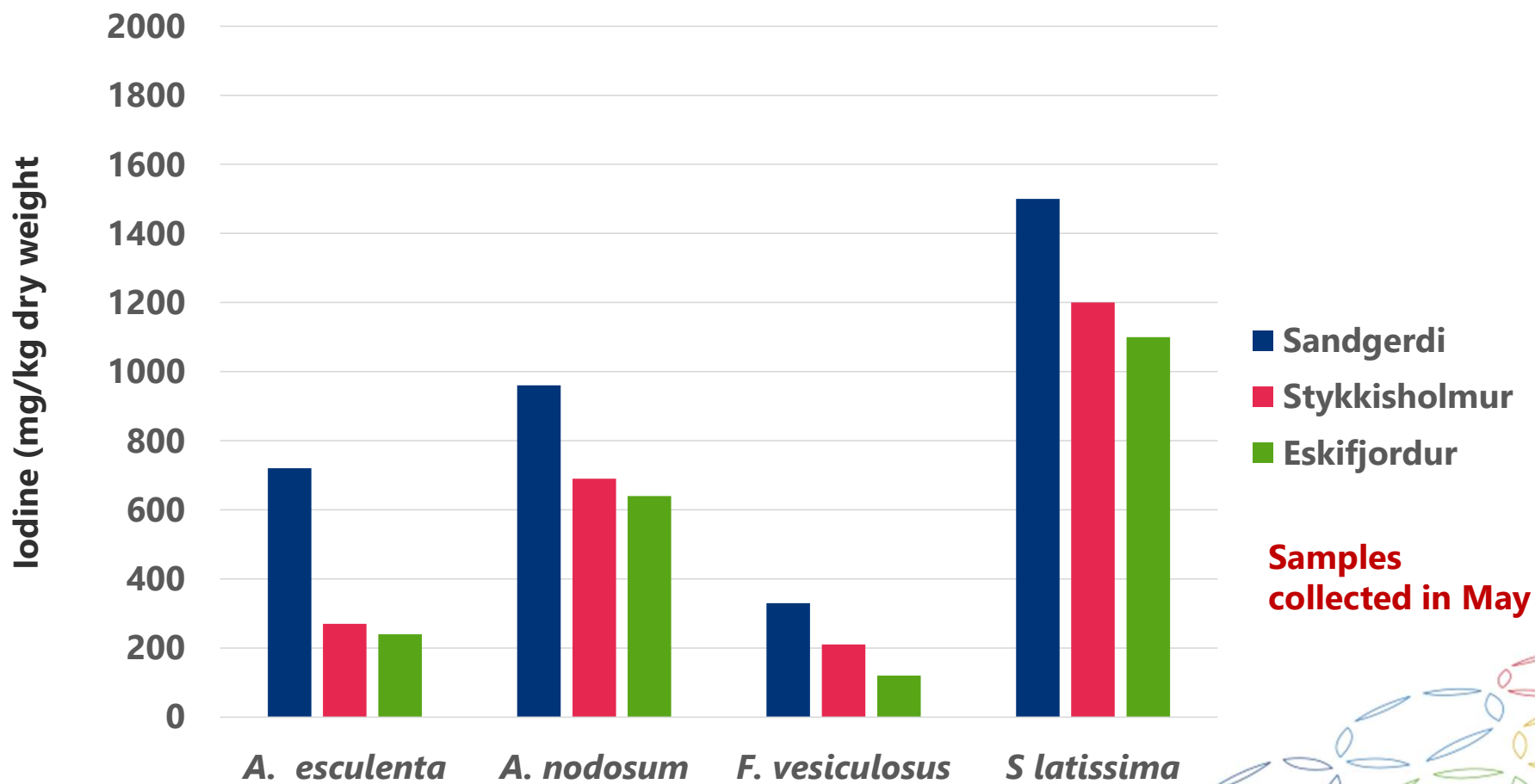


SA: Sandgerdi
ST: Stykkisholmur
ES: Eskifjordur

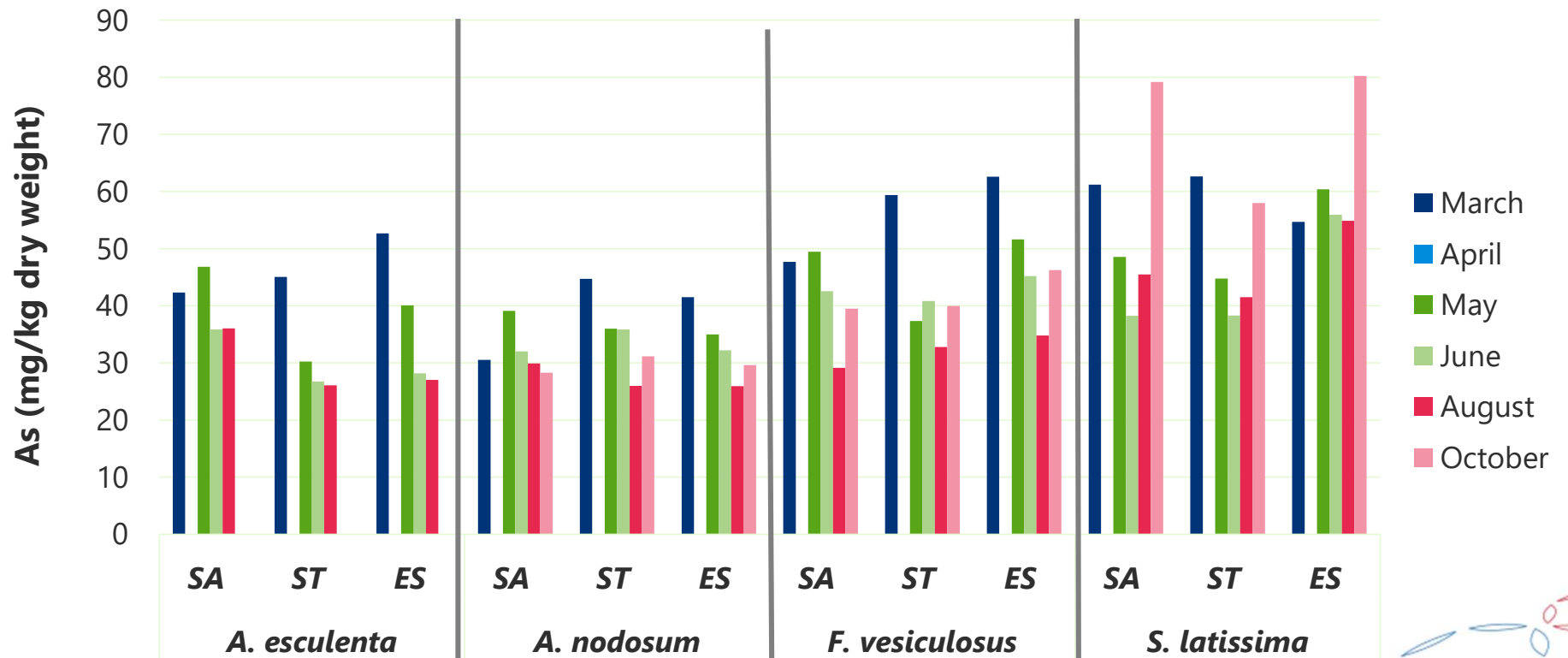
70% acetone extract, Folin-Ciocalteu method



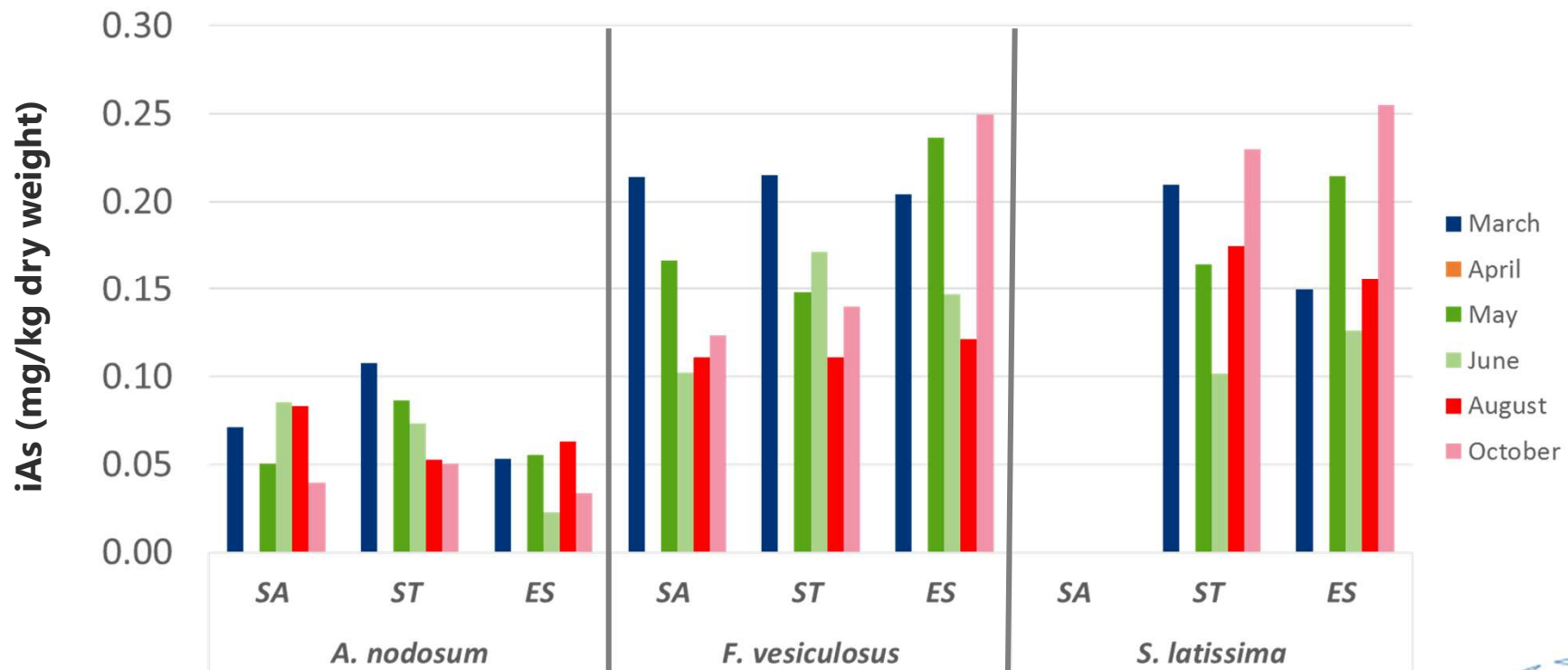
Iodine content



Total arsenic content



Inorganic arsenic



There are many interesting components in seaweed

Location and time of harvest can influence the concentration of both positive and negative components in seaweed.





Thank you

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