



Oversikt over utvikling av biråstoffsektoren på Island

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Waste or.....

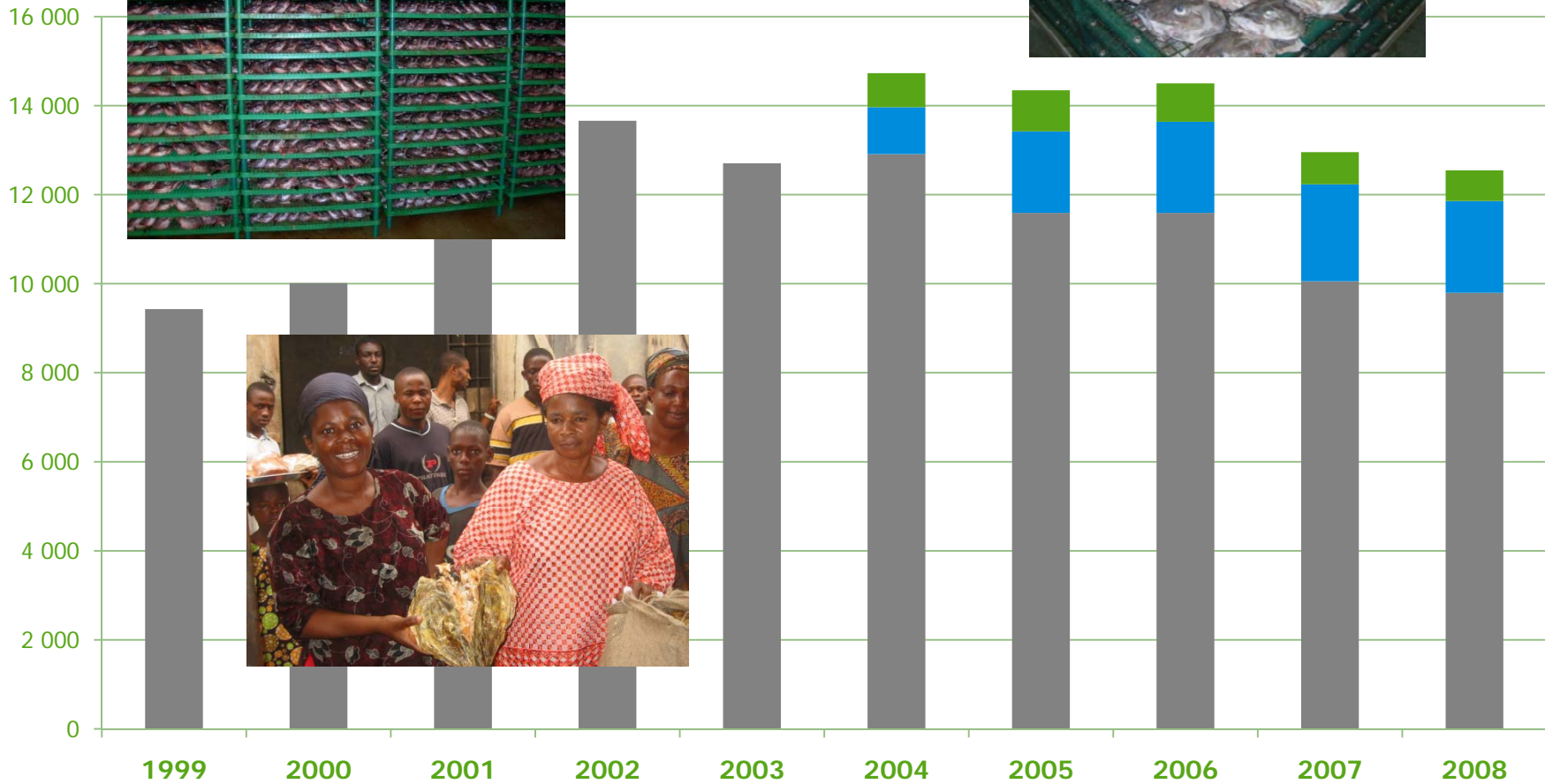


Opportunities

Export of dried fish heads from Iceland



Tn



■ Cod ■ Haddock ■ Saith

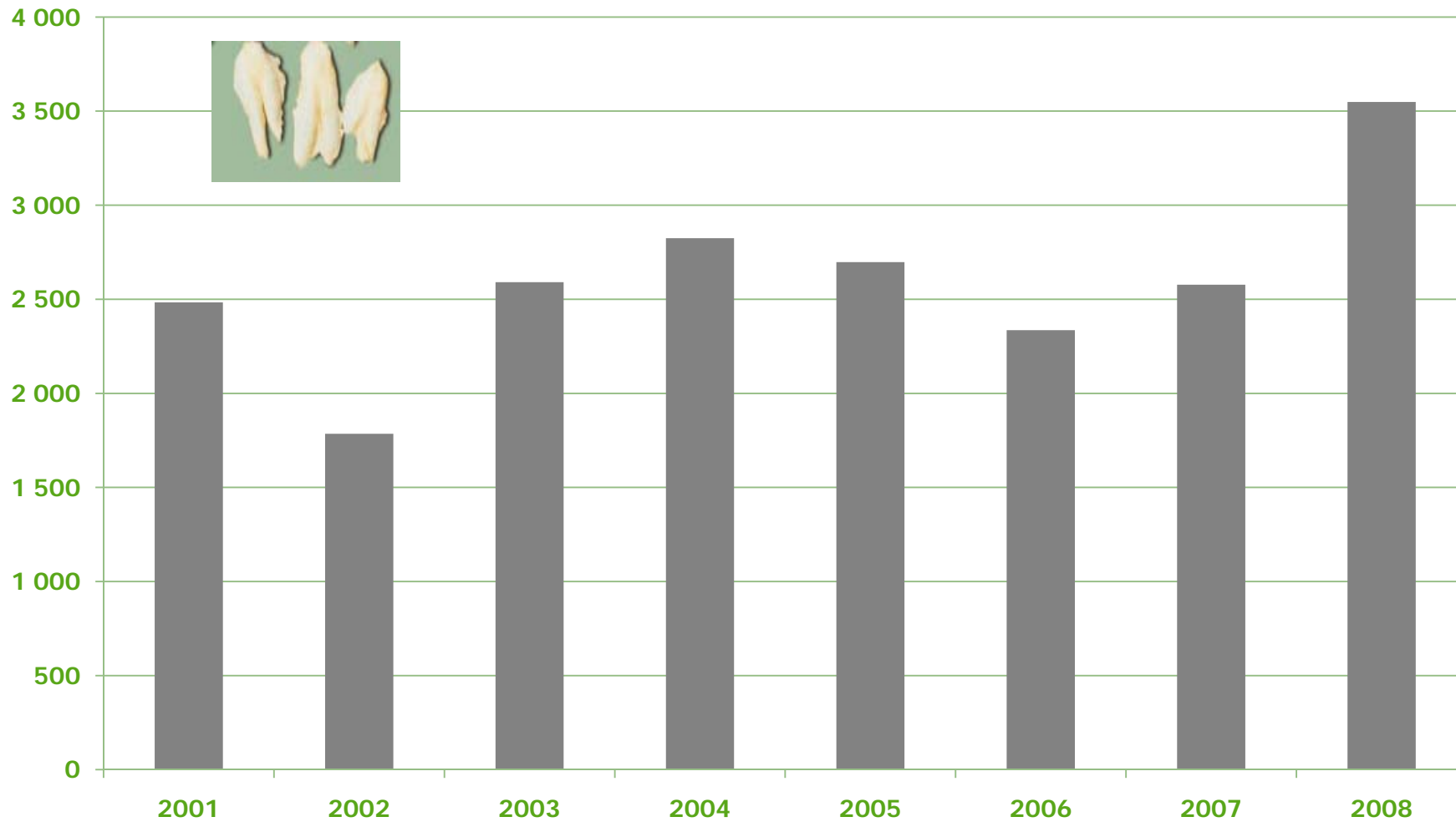
Export of canned liver from Iceland



Products from cod heads - tongues and cheeks etc.



Tn





- Dulse (*Palmaria palmata*) has been used as food or snack for centuries in Iceland
- Dulse is dried
- Estimated market is 500 tn or 125 tn dried weight
- Other types of seaweed
 - Irish moss
 - Dabberlocks
 - Icelandic kelp
 - Sea belt

Local foods and tourism related initiatives

Sole is a traditional food in Iceland now available for tourism in a new form



Local foods and tourims related initiatives

THE VATNAJOKULL REGION

PRODUCE OF VATNAJOKULL REGION
WOW!
AFURÐ ÚR RÍKI VATNAJOKULLS

SOUTH EAST ICELAND

HEIMAMARKAÐSBÚÐ LOCAL FOOD STORE

AT THE HARBOUR / VIÐ HÖFNINA

OPEN MON-FRI / OPIÐ MÁN-FÖS **15-19**

BÚÐIN ER REKIN AF HÓPI SMAFRAMLÉIÐANDA / THE STORE IS OPERATED BY GROUP OF LOCAL PRODUCERS



Surimi and isolated proteins by new processing methods



iceprotein
MPF Inc.



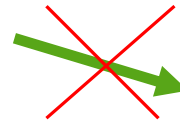
Raw material



SURIMI



Isolated proteins



Dried surimi



dried products



Freeze-dried
saithe surimi



Spray-dried
saithe surimi

New products



Popcorn- coated with
fish proteins



Corn-fish snacks with
7% fish protein powder

Significant value addition

Example 1: Fish proteins/peptides

Fishmeal



0,13 ISK/g protein

SeaCure



81,33 ISK/g protein

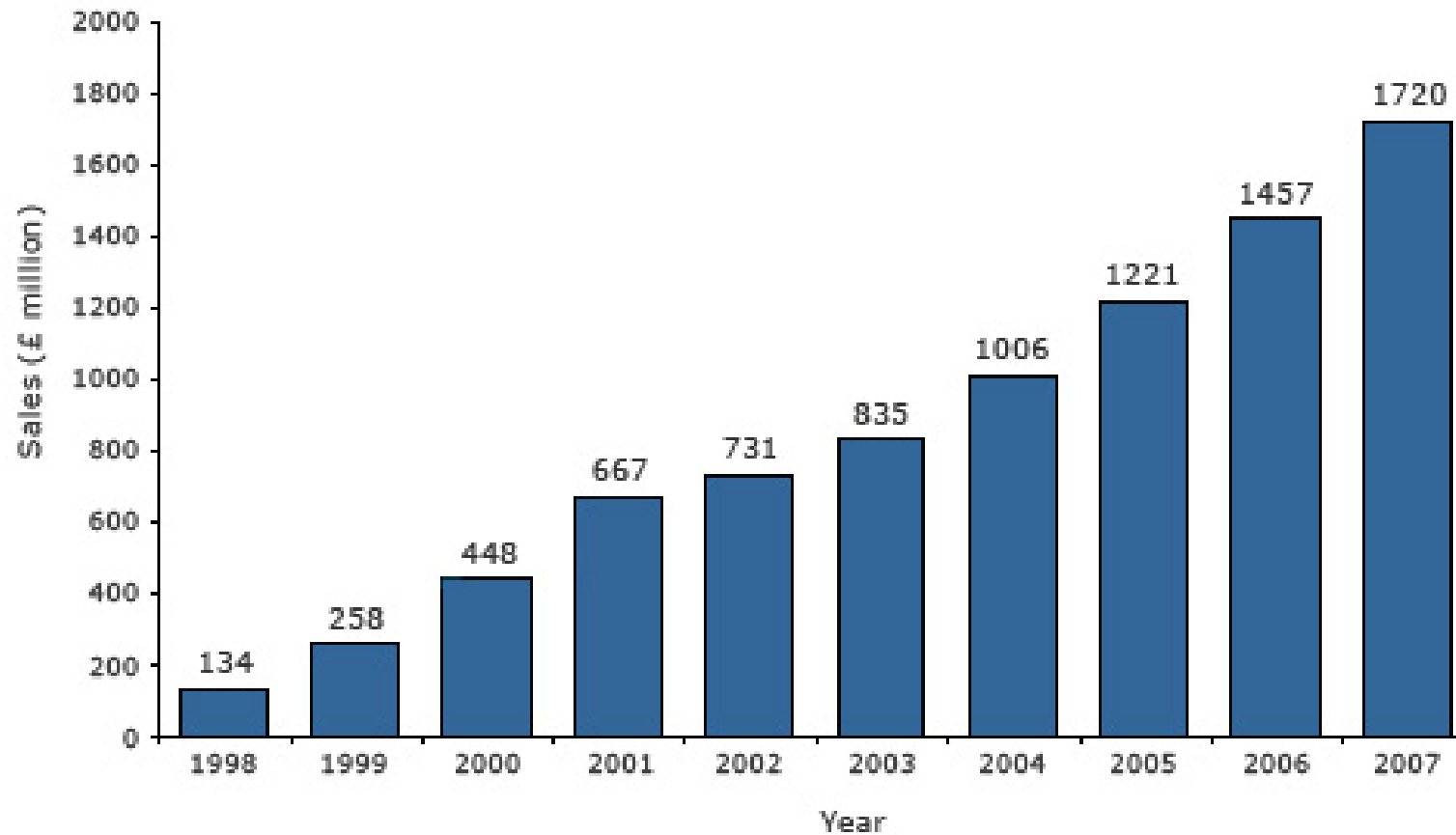
Vita Springs



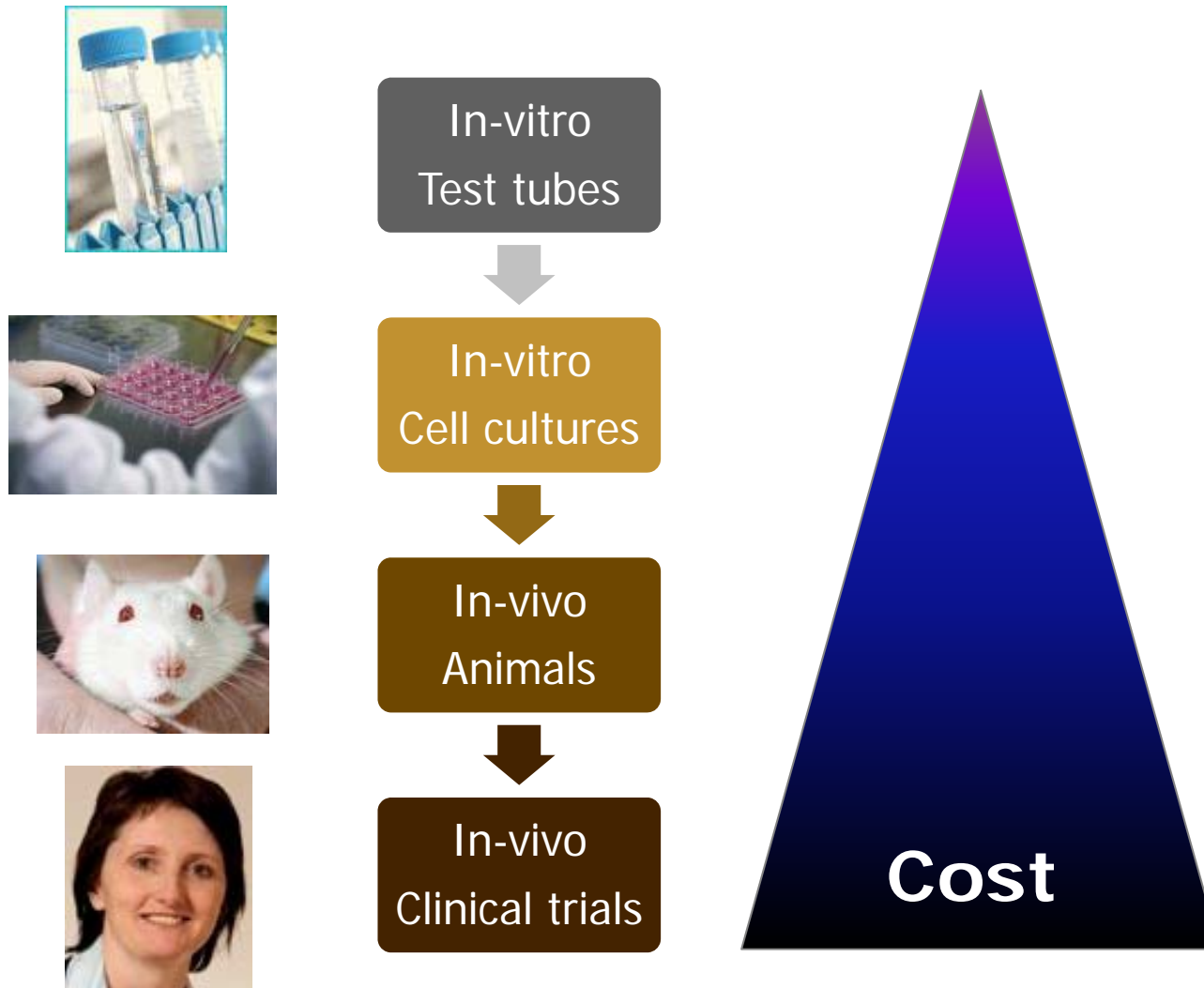
79,90 ISK/g protein

625 fold difference!

UK – functional foods



Important to document and verify bioactivity



Fish proteins hydrolyzed with different enzymes

- Icelandic enzyme blend gave the most promising results
 - Processed from fish viscera
 - Works at low temperature
 - Gives high degree of hydrolysis
- Products fractionated and ACE inhibition measured *in vitro*
 - High inhibition in specific fractions
 - Peptide identified with high inhibition properties
- Next steps
 - *In vivo* blood pressure lowering measurements in rats and humans

Significant value addition

- Example 2: Bioactive sugars from seafoods

Shark cartilage



Sea cucumber





Shrimp shells



Yield from shells: 0,002-3%

Value: 100-9250 USD/Kg

Chondroitin sulphate

 Chondrocytes
 Proteoglycan gel matrix:
contains chondroitin sulphate

Glucosamine

Growing trend toward application of natural antioxidants as functional and bioactive ingredients

- enhance oxidative stability
- maintain/improve the intrinsic quality, nutritional value
- health promoting benefits

Bioactive ingredients in seaweeds

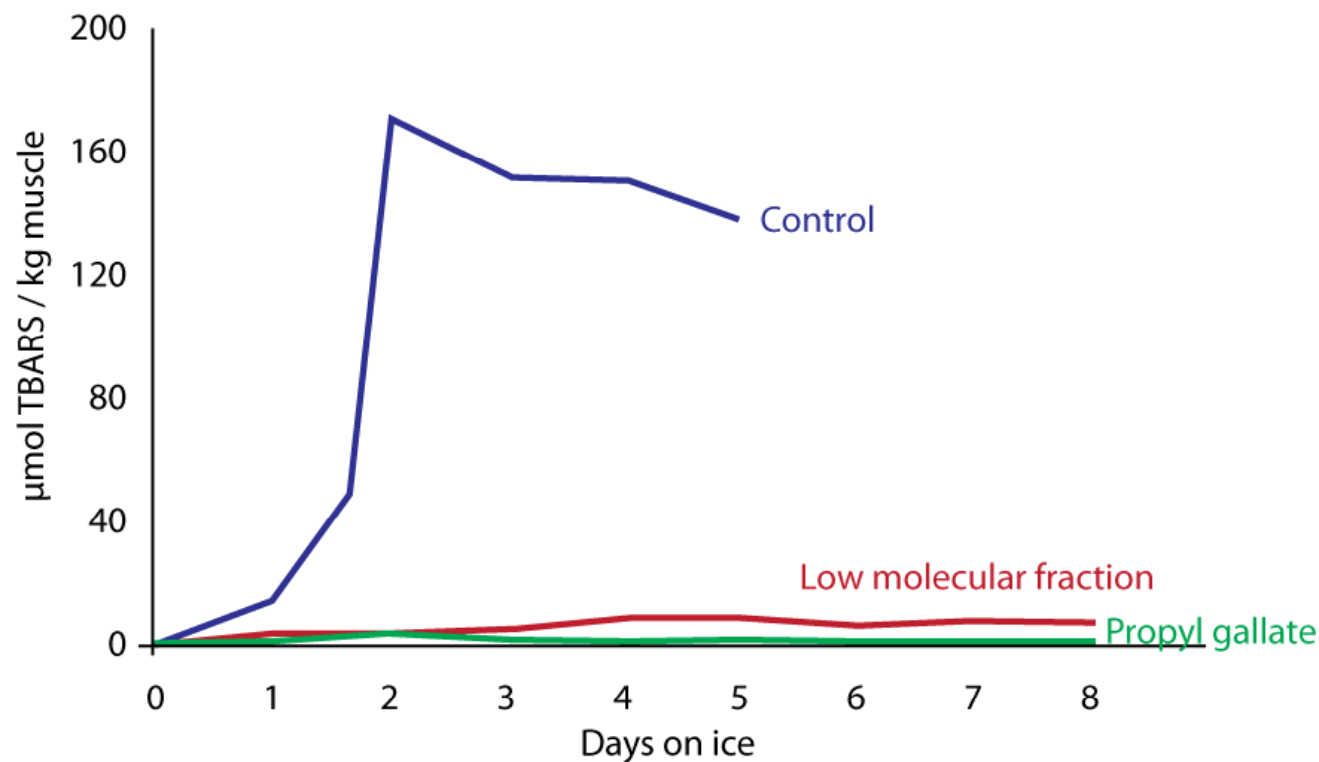
- underutilized marine sources
- **phlorotannins**
- few studies in food systems



Fucus vesiculosus (e. Bladder wrack)

Model studies (washed cod model and alkali-solubilized cod protein isolates) showed that

- phlorotannins are **promising natural antioxidants** in fish and fish products



Significant value addition

Example 3: Seaweed polyphenols

Seaweed meal



46 ISK/kg

Fibronol



91.170 ISK/kg

1980 fold difference!

Icelandic companies



ZYMETECH

marine enzyme products



KERACIS



Matis in action – platform for innovation

