



Characterization of bioactive fucoidan polysaccharides from Icelandic *Fucus vesiculosus* algae

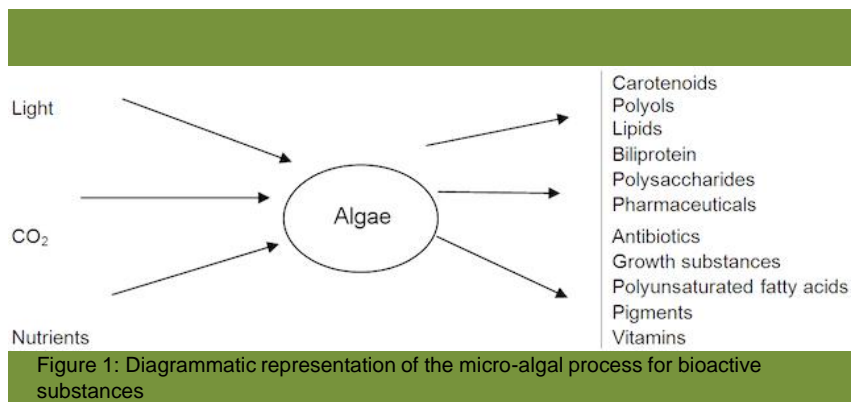
Brynja Einarsdóttir
Masters program in food science



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Introduction



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Aim of the study

- Research of fucoidan
 - Sulfated polysaccharide from *Fucus vesiculosus*
 - *Brown algae harvested on the coast of Iceland*
 - Structure
 - Bioactivity

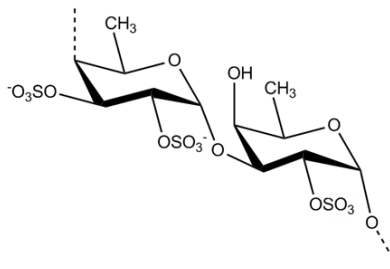


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Fucoidan

- First isolated in 1913 by Johann Harald Kylin
- Publications started to increase in the beginning of 1970
- Huge growth of interest over the past decades
- Variety of biological activities



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Activity of fucoidan

- Attributed to several different bioactivities
 - Anti-tumoral
 - Anti-coagulant
 - Anti-viral
 - Anti- inflammatory
- Structure is complex and plays a major role in the biological activity
 - Depends on the environment and species



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Methods

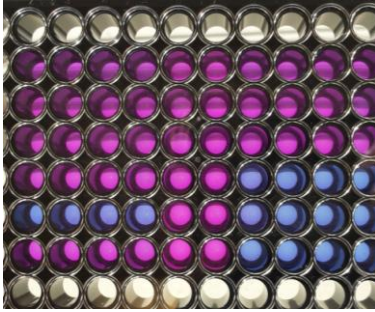
- Different extraction processes have been developed along with purification methods.
- Carbohydrate analysis with phenol – sulfuric acid method (TCC)
- Total polyphenol content (TPC)
- Analysis of the composition
 - Ion chromatography (IC)
 - Thin-layer chromatography (TLC)



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Bioactivity methods



- Antioxidant assays
 - ORAC
 - DPPH
 - CAA



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Results

- Different activity between different extraction methods
 - Different yields of fucoidan
- Purified samples
 - High in CAA
 - anticarcinogenic effects
 - No activity in ORAC, DPPH, and TPC

Purified samples



HCl extraction



H₂SO₄ extraction

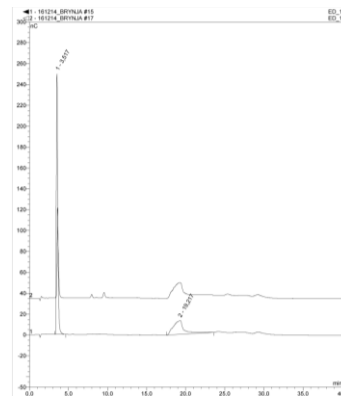


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Results

- IC results confirmed high amount of fucose
 - Reported that fucose can be around 83%
- Needs to be quantified later on in my samples
- Further test are needed



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Upcoming researches

- Production of bioactive oligosaccharides from fucoidan with enzymatic hydrolysis
- Structure analysis with GC-MS
- Further bioactivity tests
- Immunoassays



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Conclusions

- Successful extraction of bioactive fucoidan
- High potential for use in nutraceutical and functional food industry



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Thank you for listening



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