Anti-diabetic properties of *Fucus vesiculosus* and pine bark extracts using the adipocyte cell model 3T3-L1

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Background

• Obesity is characterized by excess fat accumulation in adipocytes
• Major risk factor for secondary diseases like type 2 diabetes mellitus
• Progression of T2DM also linked with accumulation of free radicals
• Aim of this project to evaluate the effects of extracts on lipid accumulation in 3T3-L1 cells, inhibition against α-glucosidase and determine their antioxidant activity
Methods

Antioxidant activity
- TPC
- ORAC
- DPPH
- RP
- MC

Anti-diabetic activity
- α-glucosidase inhibition

3T3-L1 cell model
- Viability assay
- Proliferation assay
- Oil Red O staining
- AdipoRed staining

Results

- Pine bark extract obtained the highest antioxidant activity and the most α-glucosidase inhibitory activity
- *F. vesiculosus* water extract obtained the highest inhibition of lipid accumulation in the 3T3-L1 cells without affecting their viability

![AdipoRed staining](image)

![Oil Red O staining](image)
Conclusions

• *F. vesiculosus* extracts are effective inhibitors on lipid accumulation in 3T3-L1 cells
• Pine bark and *F. vesiculosus* extracts have potent antioxidant and α-glucosidase inhibitory activity
• Results could give rise to further research which could lead to development of a dietary enrichment compound