Anti-diabetic properties of seaweed extract using the adipocyte cell model 3T3-L1

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Introduction
Obesity is a major public health problem, arising from an imbalance in energy homeostasis which leads to excessive growth of adipocyte tissue. Adipocytes accumulate excess fat and their differentiation is considered a key process in the growth of adipose tissue, and the development of obesity, although it also plays a role in normal development and function of the adipose tissue. Obesity can also lead to secondary complications like type-2 diabetes mellitus, a serious metabolic disorder with increasing number of patients every year. Seaweed is known for its bioactive ingredients. In this study, different types of Fucus vesiculosus extracts were analyzed in terms of their antioxidant activity as well as anti-obesity and anti-diabetic effects using 3T3-L1 preadipocytes as a cell line model.

Methods and results
Chemical based antioxidant and anti-diabetic assays:

CONCLUSIONS
Results showed that 2 of the extracts expressed inhibitory activity of lipid accumulation in the cells without effecting the viability. Both of these extracts were smaller than 100 kDa. The extract which was larger than 100 kDa did not express inhibitory activity of the lipid accumulation. However, it had higher phenol content and expressed more activity in most of the chemical-based assays. This study provides supplemental information on the various biological activities of seaweed and gives reason to further investigate its anti-diabetic effects.

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References
1. Song et al. (2013). Blueberry Peel Extracts Inhibit Adipogenesis in 3T3-L1 Cells and Reduce High-Fat Diet-Induced Obesity. PLOS ONE, 8(7).