The effect of consuming boarfish protein hydrolysate on metabolic health in overweight adults

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Boarfish (*Capros aper*) is an underutilised pelagic fish species found in abundance in Irish waters[1]. Boarfish is a potential source of unique uncharacterised proteins. Research previously undertaken has shown a favourable effect of fish derived protein hydrolysate consumption on glycaemic control in diabetic murine models[2]. This study aims to investigate the effect of daily boarfish protein hydrolysate (BFH) consumption on glycated haemoglobin and body mass index (BMI) in overweight human participants.

A randomised parallel placebo-controlled human intervention study was undertaken to investigate the effect of consuming BFH for 12 weeks. Participants (n = 40) that met the following inclusion criteria were recruited; aged between 18–65 years, non-smoker, not currently pregnant or lactating, BMI > 25·0 kg/m^2 and, free from chronic illness. Participants were randomly assigned to consume either 3·5 g/day of BFH or 3·5 g of cellulose. Measures taken at baseline and post-intervention (week 12) include: height and weight, fasting glycated haemoglobin, glucose, insulin, leptin, glucagon like peptide (GLP-1), adiponectin and lipid profile. Analysis of covariance (ANCOVA) controlling for baseline values as well as other covariates (age & BMI), was used to compare differences between groups over time.

Compliance was reported as 95%. The BFH had no significant effect on any of the markers when compared with control. Although an equivalent dose of BFH demonstrated anti-diabetic properties in murine models, the same effects were not observed in humans and a larger dose may be required.

Table 1. Pre and post intevention characteristics, for both the Boarfish protein hydrolysate treatment (n = 20) and control group (n = 19)

	Control				Treatment				
	TP1 Mean	±SD	TP2 Mean	±SD	TP1 Mean	±SD	TP2 Mean	±SD	Significance (*P* value)
Age (*y*)	35·85 (10·83)				34·84 (11·64)				
Male/Female (*n*)		10:9				10:10			
BMI (Kg/m^2)	30·65	3·87	30·69	3·98	31·58	5·22	31·73	4·92	0·488
HbA1c (mmol/L)	33·85	3·83	34·7	4·36	33·47	3·39	33·05	3·46	0·123
HbA1c (%)	5·23	0·36	5·32	0·40	5·21	0·32	5·18	0·31	0·133
Insulin (mg/mL)	94·72	47·1	83·58	41·51	90·61	41·15	76·27	42·57	0·523
Glucose (mmol/L)	5·28	0·67	5·08	0·48	5·12	0·44	4·84	0·51	0·188
HDL (mmol/L)	1·22	0·29	1·12	0·26	1·08	0·26	1·05	0·24	0·994
Total cholesterol (mmol/L)	4·19	0·78	4·16	0·65	4·08	0·79	4·14	0·54	0·979

BMI; body mass index, HDL; high density lipoprotein, LDL; low density lipoprotein, SD; standard deviation, TP; timepoint. P values are generated using ANCOVA assessing the mean difference between TP2 variables of the control group, and TP2 variables of the treatment group, with TP1 variables as the covariate.

1. Egerton S, Culloty S, Whooley J, *et al.* (2017) *ICES J Marine Sci* **4**, 2059–2068.
2. Harnedy PA, Parthsarathy V, McLaughlin CM *et al.* (2018) *J Func Foods* **40**, 137–145.