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FAIRCLOUGH, Andrew and MAHADEVAN, Kritika

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Wild Wrack (*Ascophyllum nodosum*) – A replacement for salt (as sodium chloride) in bread products

Andrew Fairclough[1] and Kritika Mahadevan[1,2]

[1]Centre for Food Innovation, [2]Food and Nutrition Group
Sheffield Hallam University, Sheffield S1 1WB
K.Mahadevan@shu.ac.uk; A.Fairclough@shu.ac.uk

INTRODUCTION

FSA salt reduction targets for 2012 recommend 1g and 1.2g of salt/100g for bread and breads with additions respectively. This pilot study was conducted to explore the potential of using a whole food like seaweed to reduce levels of sodium in the bread products.

AIM

To evaluate the effect of Seagreens Human Food Quality Wild Wrack Seaweed (*Ascophyllum nodosum*) as a replacement for salt in bread products.

OBJECTIVES

- Incorporate *Ascophyllum nodosum* as a partial or complete substitute for salt in a selection of breads.
- Identify the preferred sample in each product category based on sensory and bake quality.
- Evaluate the suitability of different grades of the wrack for production of acceptable products.

METHODOLOGY

Coarse and fine grade Seagreens *Ascophyllum nodosum* inherently contain only 0.09g salt/g. They were incorporated separately into standard white and wholemeal bread recipe as 50:50 wrack:salt or 100% salt replacement (Table 1).

Table 1: Formulation of white / wholemeal bread samples

	Control	50:50 coarse	100% Coarse	50:50 fine	100% fine
Flour	400g	400g	400g	400g	400g
Salt	5g	2.5g	0g	2.5g	0g
A.nodosum	0g	2.5g	5g	2.5g	5g
Sugar	5g	5g	5g	5g	5g
Butter unsalted	15g	15g	15g	15g	15g
Yeast	5g	5g	5g	5g	5g
Water	250ml	250ml	250ml	250ml	250ml

This reduced the salt content of the loaves to 0.6g/100g and 0.09g/100g bread respectively. Controls (1.1g salt/100g loaf) were used for comparison.

For breads with additions i.e. sundried tomato and basil bread, only coarse wrack at 50% and 100% salt replacement were included (Table 2). The control samples had 1.3g salt/100g loaf.

Table 2: Formulation of sundried tomato and basil bread

	Control	50:50 coarse	100% Coarse
Flour	400g	400g	400g
Salt	5g	2.5g	0g
A.nodosum	0g	2.5g	5g
Sugar	5g	5g	5g
Butter unsalted	15g	15g	15g
Yeast	5g	5g	5g
Water	250ml	250ml	250ml
Sundried tomato paste	10g	10g	10g
Sundried tomatoes	25g	25g	25g
Basil	2.5g	2.5g	2.5g

Sliced samples with no butter were presented to 12 panellists for assessment of bake and sensory qualities. Panellists were asked to select the preferred sample under each category and provide feedback on the organoleptic properties of the bread.

RESULT

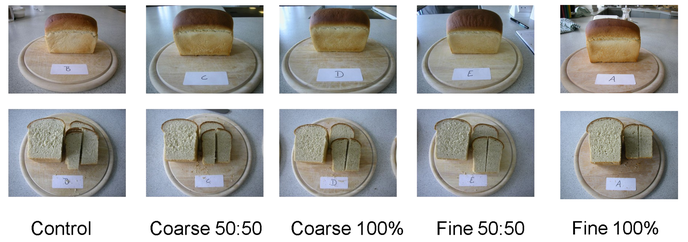
In wholemeal bread, samples containing 50:50 coarse wrack : salt were preferred (67%) followed by control (20%) and 50:50 fine wrack:salt (13%).

Figure 1: Wholemeal bread samples

Control Coarse 50:50 Coarse 100% Fine 50:50 Fine 100%

Similarly, for white bread, 75% of the panellists preferred samples containing 50:50 coarse wrack:salt; 17% preferred the samples with 50:50 fine wrack:salt and 8% preferred the control.

Figure 2: White bread samples



Control Coarse 50:50 Coarse 100% Fine 50:50 Fine 100%

Total salt replacement with wrack elicited some negative organoleptic attributes in terms of darker appearance of crumb, sea/fishy flavour and cardboard-like texture.

Sundried tomato and basil bread with 100% coarse wrack (0.3g salt/100g bread) was preferred by all panellists with no negative effect on bake and sensory quality.

Figure 3: Sundried tomato and basil bread

Control Coarse 50:50 Coarse 100%

CONCLUSION

This study demonstrates for the first time that Seagreens *Ascophyllum nodosum* is a potential replacement for salt and can be used to achieve salt levels below the recommended limit specifically in breads with additions.

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