Food **Bulletin**

cafre
College of Agriculture
Food & Rural Enterprise

Issue 3

Cutting salt levels in tomato soup

Scientific evidence links excess salt levels with increasing blood pressure, which is a major risk factor in Coronary Heart Disease and stroke. The Food Standards Agency (FSA) has identified processed foods as the main contributors of salt in the diet. Currently, adults are consuming on average 9g of salt per day. The FSA recommend a reduction to 6g of salt per day by 2010. Soup has traditionally been considered as a healthy food choice but its levels of salt have been highlighted by the FSA in its list of processed foods high in salt.

The aim of this study was to develop an organoleptically acceptable tomato soup with less salt and to assess the organoleptic effect of tomato soup containing salt replacement ingredients.

This study was conducted as two separate trials.

Trial 1: Decreasing the level of salt in tomato soup

Salt levels in soups available in Northern Ireland supermarkets have been found to range from 0.7-1.4%. Loughry technologists manufactured a tomato soup recipe with a salt level of 0.7% to be used as a "control" soup. Four recipes were then developed by lowering salt levels in 0.1 increments to give 0.6%, 0.5%, 0.4% and 0.3%. The organoleptic properties of each soup were compared with the "control" soup and assessed using formal taste panels. The results (Table 1) indicate similar scores for flavour and overall acceptability as the salt level decreased. However, the tomato soup containing 0.3% table salt was deemed unacceptable to consumers.

Table 1. Organoleptic acceptability of tomato soup with lower salt levels

Sample (% salt)	Aroma	Texture	Flavour	Overall acceptability
0.7	6.0	5.6	5.6	5.6
0.6	5.7	5.7	5.7	5.7
0.5	5.7	5.1	5.6	5.6
0.4	6.0	5.4	5.1	5.4
0.3	5.4	4.9	4.6	4.5

Scores are reflected using the hedonic scaling range show scores of 5 and above are acceptable to consumers

Trial 2: Assessing tomato soup containing salt replacement ingredients

The use of salt replacement ingredients were investigated to determine if a tomato soup with a lower level of salt could be developed without compromising on taste (Table 2). The tomato soup containing 0.5% table salt was deemed acceptable to consumers and was used in the second trial as a comparison to tomato soup samples containing salt replacement ingredients.

Table 2. Organoleptic acceptability of tomato soup containing salt replacement ingredients

Sample	Aroma	Texture	Flavour	Overall acceptability
1 Table salt (0.5%)	5.8	5.8	6.1	6.1
2 Losalt (0.5%)	5.1	5.3	4.8	4.9
3 Icelandic salt (0.5%)	5.8	5.6	5.5	5.3

Scores are reflected using the hedonic scaling range show scores of 5 and above are acceptable to consumers

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The results show tomato soup containing table salt was superior in terms of aroma, texture, flavour and overall acceptability compared with the samples containing salt replacement ingredients. The texture and flavour of tomato soup containing salt replacement ingredients received considerably lower scores.

Definitions

Table salt contains 100% sodium chloride (NaCl).
LoSalt contains a blend of sodium chloride (NaCl) and potassium chloride (KCl) as 66% KCl/33% NaCl.
Icelandic salt contains a blend of sodium (NaCl), potassium (KCl) and magnesium chloride (MgCl) as 40% NaCl/40% KCl/17% MgCl.

Conclusion

The development of a tomato soup with 30% less salt than current retail brands can be achieved through decreasing the level of salt added and/or using a salt replacement ingredient. This tomato soup contained 0.5% salt, which is within the FSA's recommended target level of not greater than 0.6% for commercial soups.

Further assistance in reducing the level of salt in your food products can be obtained by contacting Dr Roisin Lagan at CAFRE, Loughry Campus on 028 867 68153 or by emailing roisin.lagan@dardni.gov.uk

College of Agriculture, Food and Rural Enterprise (CAFRE) is an integral part of the Northern Ireland Department of Agriculture & Rural Development. Loughry is the College's centre of excellence for food technology and has lead responsibility for people development and technology transfer programmes in the food processing and supply industry. It provides key expertise in food manufacture, safety, packaging, innovation and waste minimisation.

If you have any comments or suggestions on future content, or need help with solving a problem in your business, please do not hesitate to contact Dennis Legge by emailing dennis.legge@dardni.gov.uk

This study is part of the Salt Reduction in Foods project currently being undertaken by CAFRE.

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