

Cutting salt levels in tomato ketchup

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 and the FSA recommend a reduction to 6g of salt per day by 2010. Hidden salt levels in sauces and dressings were one group of processed foods identified by the FSA.

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

This study was conducted as two separate trials.

Trial 1: Decreasing the level of salt in tomato ketchup

Initial analysis of current retail brands of tomato ketchup has shown that they contain 2.5-3.5% salt. Four recipes based on a commercial tomato ketchup recipe were formulated at Loughry with salt levels 1%, 1.5%, 2% and 2.5%. The organoleptic properties were assessed using formal taste panels.

The results in Table 1 show sample scores for each organoleptic attribute and the overall acceptability are quite similar but scores tended to decrease as the level of salt per sample

decreased. However, the tomato ketchup sample containing 1% salt scored the second highest for flavour and overall acceptability.

The scores in Table 1 reflect that some consumers cannot distinguish between the different levels of salt investigated suggesting that the level of salt could be lowered without affecting the organoleptic qualities.

Table 1. Organoleptic acceptability of tomato ketchup with varying levels of salt

Sample	Aroma	Texture	Flavour	Overall acceptability
2.5% Table salt	6.67	7.42	7.25	7.08
2% Table salt	6.33	6.58	6.67	6.83
1.5% Table salt	6.67	6.83	6.67	6.67
1% Table salt	6.25	6.83	6.75	6.92

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

Trial 2: Assessing tomato ketchup containing salt replacement ingredients

In a second trial the tomato ketchup sample containing 1% table salt was compared for organoleptic acceptability with recipes containing salt replacement ingredients (1% LoSalt and 1% Icelandic Mineral salt).

The results in Table 2 show that tomato ketchup samples developed using LoSalt and Icelandic mineral salt received lower scores for overall acceptability when compared with table salt. These scores however reflect that all products were still considered organoleptically acceptable.

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

Sample	Aroma	Texture	Flavour	Overall acceptability
1% Table salt	6.30	6.75	6.90	6.96
1% LoSalt	6.25	6.08	5.75	6.00
1% Icelandic Salt	6.00	6.00	6.50	6.33

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

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 ketchup product containing 1% salt would be acceptable to consumers. This product contains 60% less salt than a typical tomato ketchup product and hence could be labelled as a “reduced salt” product.

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 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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