

## Herbs and spices: A useful approach for reducing salt content in soup

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Researchers from the University of Reading in the UK have found that the addition of herbs and spices can increase consumers' liking of reduced-salt soups. They found that reducing salt led to a significant decline in liking for the soup, which initially was unaffected by the addition of herbs and spices. However, consumer acceptance for the herbs and spices soup increased after regular exposure over five days. Consumers also perceived that this soup contained a similar level of salt as the standard soup. While salt is an important component of many foods, a high sodium diet can increase the chances of hypertension, and therefore, the risk of cardiovascular disease. Salt in foods is used for taste, texture and preservation, so reducing salt in food products can be a considerable challenge for food manufacturers.

During the study, the University of Reading researchers investigated consumers' liking of reduced-salt soup with added herbs and spices, after repeated exposure. The study involved 160 participants from the UK, selected to represent a balance of gender, age ranges and socioeconomic groups. Participants' daily salt intake was estimated by means of a urine sample and a food frequency questionnaire.

Three tomato soup samples were produced: a standard soup (containing the average level of salt in UK soup brands), and two reduced salt soups with 57% less salt than the standard; one with oregano and other herbs and spices, and one without.

During the first phase, the three soup samples were presented to the participants, and the standard soup was significantly preferred for its flavour. However, there was no difference in preference between the reduced-salt soup, and the oregano-modified soup. Both were also considered 'less familiar' than the standard soup. Ratings for 'flavour intensity' of the low-salt soup were considerably lower than those of both the standard and the oregano-modified soup.

The next phase aimed to assess consumer liking after exposure to the soups over a three-day period. Participants were divided into three groups (balanced according to their age and gender, self-reported use of herbs and spices in cooking, salt intake and scores in relation to their liking for the soups) and provided with a full portion of just one of the three soups. During these visits the liking scores of the oregano-modified soup increased significantly, whereas consumer acceptance of the standard and reduced-salt soups stayed the same.

The study also measured the participants' perceived saltiness of the soups. While the low-salt soup was perceived to be significantly less salty than the standard soup sample, there was no perceived difference between the saltiness of the standard soup and oregano-modified soup. Preferences toward the soups correlate with the daily salt intake of participants, with those with a higher salt intake having a higher preference for the soups overall.

Participants' liking of the oregano-modified soup improved after repeated exposure. The researchers suggested this observation could relate to the theory of food neophobia (a person's reluctance to consume

new foods or flavours). In the present study, flavour reformulation of the soup reduced its familiarity, causing an initial decline of liking. However, repeated exposure over time can increase familiarity and as a consequence, consumer acceptance.

A similar study from researchers in Brazil looked at the preference for different salt concentrations of two groups of older individuals (aged between 63 and 79 years), with normal or high blood pressure. A preference for bread samples with different salt concentrations, first without and then with the addition of oregano, was tested and it was found that individuals with higher blood pressure had a greater preference for the saltiest sample. However, the use of oregano reduced the preference for saltier bread samples in both groups.

The two studies demonstrate that the addition of new flavours, like herbs and spices, can reduce the need for salt in food and enhance the perception of saltiness. The authors conclude that the addition of carefully selected herbs and spices could encourage manufacturers to reduce salt in certain food products.

For further information please see:

Salt reduction study in soup: [Khalil Ghawi S, Rowland I, & Methven L. \(2014\). Enhancing consumer liking of low salt tomato soup over repeated exposure by herb and spice seasonings. \*Appetite\* 81:20–29.](#)

Salt reduction study in bread: [Teixeira Meirelles Villela P, Borges de-Oliveira E, Teixeira Meirelles Villela P, et al. \(2014\). Salt Preferences of Normotensive and Hypertensive Older Individuals. \*The Journal of Clinical Hypertension\* 16\(8\):587-590.](#)