Novel approaches to reduce sodium chloride in yeast leavened cereal product

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Dietary sodium reduction is an important factor in the prevention of hypertension and related cardiovascular diseases. Most of all, cereal products are particularly affected by regulations, since ca. 25% of the required sodium intake per day and person is taken up by cereal products. Therefore, cereal products are regarded as the sodium main supplier in the human diet. Sodium replacements by other cations such as potassium, ammonium, calcium, or magnesium are the most commonly used method of sodium reduction. However, replacement of sodium with a large amount of potassium chloride (more than 30-50% substitution) wheat bread remained bitter and with a metallic off taste. Thus several bitter blocker were tested (AMP, sucrose, lactose, trehalose), to what extent they reduce the bitterness of potassium. Sucrose was the most effective substance; above 3% sucrose (based on flour) addition the bitterness was significantly reduced in wheat breads, however sweetness also increased.

Another more innovative and not widely used way, to reduce sodium in food products is the usage of a saltiness enhancer. A saltiness enhancer can be defined as a substance which raises the saltiness perception of a salty substance without showing any significant saltiness. Thus several saltiness enhancers (arginine, lysine, lactate, sourdough) were analyzed in wheat baked goods regarding the changes in rheological, technological and sensory parameters. Sourdough presented more aromatic bread and 0.75% Arginine as well as 0.25% K-lactate (based on flour, respectively) increased saltiness perception significantly.

The results achieved by this study provide a valuable basis for designing functionally effective sodium replacers.