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The Effect of Salt Reduction and Salt Replacers as Sodium Reduction Strategies on The Chemical, Microbial and Sensory Quality of Biltong, A Traditional South African Intermediate Moisture Meat Product

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Abstract

Introduction: Biltong is a popular traditional SA ready-to-eat dried meat product. South Africa recently introduced regulations to reduce salt content of several food types. The international norm is reducing the daily consumption of salt to 5 g and Na to 2000 mg / individual / day. In a recent survey, we indicated that Biltong contained, on average 4.73 % salt and 1948 Na / 100 g. A 100 g portion of Biltong will basically supply the total recommended daily salt and sodium content of an individual. Biltong is currently not included in the regulations. It is, however, important to ensure that Biltong adheres to the health and nutritional demands of the modern consumer. The aim was to reduce salt content of Biltong by 50%, by using salt reduction and replacers.

Methodology: Five Biltong treatments were formulated: A - Biltong containing 4.73 % salt (Positive control, according to the survey); B - Biltong containing 2.365 % salt (50% reduction) and 2.365 % KCl; C - Biltong containing 2.365 % salt and 2.365 % organic K salts; D - Biltong containing 2.365 % salt and 2.365 % K-lactate; E - Biltong containing 2.365 % salt (Negative control). Biltong was processed and dried according to conventional manufacturing procedures. The chemical analysis included the determination of NaCl, Na and K content, a_w, lipid oxidation, moisture content and pH. The microbial analysis included total bacterial count, *Escherichia coli*, coliforms, *Staphylococcus aureus*, *Listeria monocytogenes, Enterobacteriaceae*, lactic acid bacteria and yeasts and moulds.

Results and discussion: Treatments which contained KCl, organic potassium salts and potassium lactate as replacers, were successful in maintaining the sensory properties of Biltong in comparison to the positive control. Overall, the treatment which contained the organic potassium salt, was the replacer which was the most effective in inhibiting the growth of *Escherichia coli*, *Staphylococcus aureus*, and lactic acid bacteria. Consumers could not detect any differences in any sensory attributes in the Biltong samples which contained replacers.

Conclusion: This study found that 50% reduction in sodium chloride content of Biltong was possible, without causing significant adverse effects on the product's chemical, sensory or microbial quality.