

# DEVELOPMENT OF HEALTHY MEAT PRODUCTS: A BIBLIOMETRIC AND SENSORY PERSPECTIVE

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## I. INTRODUCTION

Chronic Non-Communicable Diseases (NCDs) constitute one of the main health problems worldwide causing 81% of deaths in Latin America and the Caribbean (1). The excessive intake of sodium and fats has generated this type of problems, for this reason different efforts have been made with the aim of reducing sodium intake, which according to the WHO should be less than 5g per day per person (2), as well as reducing the amount of fat. In this sense, different technological efforts have been developed all over the world, such as the reduction of sodium content in meat products (3,4), fat substitution (5,6). According to ISO 6658, sensory analysis is considered "the tastiest of all sciences" (7). Despite extensive research on meat product reformulation, there is a gap in understanding the effectiveness and consumer acceptance of these strategies. This review aims to explore healthy strategies for meat products, focusing on sensory evaluation and consumer acceptance. It hypothesizes that reformulated products with reduced sodium and fat will meet health guidelines and maintain high sensory acceptance among consumers.

## II. MATERIALS AND METHODS

In June 2024, the Scopus database was searched for articles published between 2018 and 2024 with the terms "meat" AND "healthy" AND "strategies" AND "sensory," resulting in 76 documents. Using Rayyan software, authors selected 59 articles focusing on healthy meat product strategies with sensory evaluations, human studies, and within the 2018-2024 timeframe. After a thorough review, excluding non-relevant studies, 38 articles were included, using the PRISMA method (8). The articles were analyzed using the Bibliometrix R package (9) and VOSviewer software (10).

## III. RESULTS AND DISCUSSION

The top three articles by citations focus on healthier meat products through fat and sodium reduction (11,12,13). According to the findings, the three countries with the highest number of publications on the subject are Brazil, Spain and Portugal. The analysis of the 38 articles from 2018 to 2024, it is observed that research has focused on developing meat products with healthier profiles. In addition, there is a strong emphasis on developing meat products with fat reductions or substitutions. Reflecting the adaptation of the scientific community to the needs and trends of the population in search of healthier foods taking into account the sensory quality of the product. Co-occurrence analysis identified four clusters: texture and sensory acceptability, animal production, gelling and emulsification, and fat reduction strategies taking into account substitute oils and acid grades for the development of meat products (6). All these clusters demonstrate the possibility of developing healthier meat products. Of the 38 articles reviewed, there is a distribution of different types of meat products where healthier strategies were applied, where 34% were hamburgers, 32% sausages, 8% salami, 5% pates and 21% other products such as: chorizo, mortadella, etc. Likewise, the strategies applied in the formulation of these products were: 76% made reductions and substitutions of fats in meat products, 11% of the studies made salt reductions, 8% salt and fat combinations, and 5% phosphate reductions, resulting in healthier products. In addition, 14 of them applied descriptive methods to generate attributes for the different types of meat products, and all 38 articles applied affective methods to measure the degree of acceptance of the products, of which 22 studies used the nine-point hedonic scale. This scale has

been widely used since its creation by (14) and remains the most widely used scale. Ten studies used the seven-point hedonic scale, four used the ten-point hedonic scale and two used the five-point hedonic scale. In addition, 87% of the studies had a good acceptance of reformulated meat products and 13% accepted options with the lowest concentration of the substituted product.

#### IV. CONCLUSION

The analysis of 38 articles reveals a trend toward producing healthier meat products by reducing fats, salt, and phosphates. Most studies focus on hamburgers and sausages, improving texture and nutritional value while maintaining sensory acceptability. Bibliometric tools highlight emerging topics and trends. Affective methods, particularly the nine-point hedonic scale, are widely used to measure consumer acceptance. Overall, reducing fat and sodium are viable strategies for healthier meat products

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