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Market-Driven Innovation in Functional Foods: Development of Low-Fat Tom Yum Chicken Sausages and a Commercial Framework Leveraging AI Influencer Marketing and Food Sustainability Trends

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Abstract

This research establishes a multi-dimensional methodological framework that synthesizes food science innovation with a strategic marketing paradigm to facilitate the development of a commercially viable, lipid-reduced chicken sausage. By infusing an authentic Thai Tom Yum botanical matrix—comprising lemongrass, kaffir lime leaves, and dried shrimp—into a lean chicken protein base, the study cultivates a distinct cultural and sensory identity that differentiates the product within the meat sector. To address the ongoing global demand for health-optimized food, significant fat reduction was achieved through the application of konjac. The hydrocolloid functions as a fat replacement. The characterization of the experimental formulations serves as a critical bridge between laboratory innovation and consumer reality, utilizing a rigorous three-tiered analytical approach to validate the product's integrity.

By evaluating the proximate chemical composition, the study provides a quantitative "nutritional fingerprint" that confirms a significant reduction in crude fat and an optimization of moisture and protein levels, ensuring the sausage meets its health-oriented claims without sacrificing essential nutrients. This chemical data is complemented by instrumental Texture Profile Analysis (TPA), which employs mechanical testing to measure physical attributes like hardness, springiness, and cohesiveness; this ensures that the konjac hydrocolloid effectively mimics the "snap" and structural elasticity of traditional fat-rich sausages, preventing a mushy or undesirable mouthfeel. Ultimately, the most vital indicator of market potential is the sensory consumer evaluation, where a panel of fifty participants used a 9-point hedonic scale to provide a subjective verdict on the flavor, aroma, and texture. The resulting overall liking score of 6.86—landing between "like slightly" and "like moderately"—is a significant achievement for a functional food prototype, while the impressive 86% total acceptance rate demonstrates that the integration of the Tom Yum botanical matrix successfully masks any sensory deficits caused by fat reduction, creating a product that consumers find both nutritionally superior and genuinely enjoyable to eat.

Extending beyond laboratory parameters, the investigation provides an exhaustive market feasibility analysis grounded in the 4Ps marketing mix, specifically contextualized within contemporary digital ecosystems. A cornerstone of this commercial strategy is the deployment of AI-mediated influencer engagement designed to penetrate health-conscious demographics with precision. Furthermore, the product's strategic positioning is harmonized with sustainable food consumption patterns, emphasizing the nexus between long-term physiological wellness and responsible production ethics. Consequently, this fusion of functional nutrition and disruptive digital marketing provides a robust blueprint for the successful commercial scaling of value-added food innovations in the modern industrial landscape.

Keywords: Market Feasibility, Functional Meat Products, Low-Fat Innovation, Tom Yum Flavor, Consumer Acceptance, Marketing Mix (4Ps), Artificial Inteligent Perception

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