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Food safety management on the technological flow of obtaining beet bread

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Abstract: *Maintaining food safety from production to consumption by ensuring hygiene practices and traceability at every step of the supply chain are essential tasks for the food industry.*
ISO 22000:2018 sets out the requirements for a food safety management system. This standard outlines the steps a food processing facility must take to demonstrate its ability to control food safety hazards and ensure that food is safe for consumption.
The aim of this paper was to highlight the relevance and defining elements of food safety management on the technological flow of obtaining an assortment of bread with beetroot by developing a HACCP plan corresponding to the related manufacturing technology. The following objectives were presented: hazard analysis, risk assessment, monitoring control measures and taking corrective actions.

Introduction

Food safety management plays a defining role in ensuring the quality, safety and integrity of food for consumers. With growing concerns about food-borne diseases, the expanding complexity of global food supply chains, effective food safety has become essential.
Food safety management refers to the methodical approach and procedures implemented by food businesses to ensure the safety of food products at each stage of the food manufacturing process. The importance of food safety management, its key component elements and the benefits it offers to consumers, businesses and regulators are highlighted.
A comprehensive food safety management system includes internationally recognized standards such as Hazard Analysis and Critical Control Points (HACCP), ISO 22000 and Good Manufacturing Practice (GMP). These standards provide guidelines for identifying and controlling potential hazards, implementing preventive measures and maintaining hygiene and quality standards.

Material and method/Results and discussions

Development of the HACCP plan on the technological flow of beet bread manufacturing

Operation	Hazard	Monitoring procedure					Corrective action	Who answers	Records
		What the	Critical limits	How	When	Who			
Reception of raw and auxiliary materials CCP1	**Biological** Molds Microorganisms **Chemical** Mycotoxins Insecticides Pesticides Fertilizers **Physical**	Genus *Aspergillus* and *Penicillium* Genus *Escherichia Coli* Foreign bodies, impurities, sand, soil	Absence or exceeding of maximum limits allowed by official regulations for these substances	Physico-chemical and microbiological determinations	At each reception of raw materials	Quality engineer	The product is not received, Exclusion of the supplier from the list of accepted suppliers	Procurement coordinator, raw materials manager, quality engineer	Analysis bulletins, Receipt control sheet
Sifting CCP 2	**Biological** Molds **Chemical** Insecticides Pesticides Fertilizers **Physical**	Genus *Mezentericus*	According to the technical specification of the product Presence of impurities	Physico-chemical and microbiological analysis	Verification of the quality certificate issued by the supplier at each reception	Quality engineer	Check the sites, and if necessary, change them	Quality engineer	Analysis bulletins, Inspection sheet at reception
Baking CCP 3	**Biological** Pathogenic microorganisms in the room **Physical** Mineral impurities	Genus *Cereus* Dust particles	Absence of microorganisms Temperature different from the temperature specified in the manufacturing recipe Baking time >30 minutes	Monitoring technological parameters	Monitoring and recording of thermal regime parameters	Technology Flow engineer	Identification and separation of products found to be non-conforming Furnace repair by the mechanical engineer	Quality engineer, Technologist engineer Mechanical engineer	Baking temperature monitoring sheet
Cooling CCP 4	**Biological** contamination with pathogenic bacteria **Physical** seed and grain waste	Impurities in cooling spaces	Lack of microorganisms and mineral impurities	Monitoring the sanitation and cleaning of cooling rooms	Recording operation-specific parameters	Quality engineer	Identification of non-conforming products Finding the causes	Quality engineer, Technologist engineer	Cooling regime monitoring sheet

Conclusions

The successful application of HACCP requires the commitment and full involvement of management and the workforce. It requires a multidisciplinary approach that includes, as appropriate, specialists in microbiology, public health, food technology, environmental health, chemistry, engineering, etc., depending on the particularities of the food technological flow. HACCP is the system of choice in food safety management.