

# ADVANCEMENTS IN MEAT PACKAGING AND ITS SIGNIFICANCE

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**Abstract – Nutrition, health and well-being are the main factors driving the global food industry. Although meat and meat products are extremely nutritious, they want to grow and multiply, and thus, deteriorate and pathogen microorganisms, so that quality deterioration and food safety risk are high. While meat can deteriorate fairly, proper handling and packaging help to maintain quality. Recently, innovative measures have been developed to improve the quality and extend the shelf life of packaged meat products using technologies such as barrier film, irradiation, nanotechnology, active packaging, micro-piercing, plasma and remote infrared (FIR) applications. In order to develop successful meat packaging systems, stability, main product characteristics that affect environmental conditions during storage, and consumers' consumption and packaging expectations should be considered.**

**Key words – innovative food packaging techniques, innovative packaging, meat product**

## I. INTRODUCTION

Oxidation of meat lipids and proteins (eg myoglobin, fatty acids) also causes quality deterioration. Modern meat packaging should be seen as an effective means of preserving quality and safety while increasing the value of the product while at the same time encouraging sales and gathering information [1]. Consumers have come up with food packaging technologies known as ready food, a result of the desire for delicious and lightly processed food products. Packing innovations such as electrically operated packaging machines, aseptic packaging, metal boxes, flexible packaging, aluminium foil and flexographic printing have begun earlier. The introduction of various materials, eg. Polyester, polypropylene and ethylene vinyl alcohol polymers flexible packaging from plastic, metal, cardboard and glass packaging. Smart packaging is an exciting and evolving part of packaging science and technology that offers great opportunities to increase quality, food safety and convenience and thus reduce the number of retailers and consumer complaints. To provide longer shelf life, active packaging and intelligent packaging were developed to change the conditions of the package, provide information, monitor the product supply chain, and provide non-fake functionality [2].

## II. FUTURE TRENDS

Nanotechnology is likely to play an important part in the near future keeping in consideration the safety concern associated with packaging. To address the safety as well as other additional issues research and development in the field of active and intelligent packaging grew at dynamic pace with the aim to provide eco-friendly packaging alternatives. This posed a challenge of designing packaging materials by employing reverse engineering approach on the basis of requirements of food product besides on the availability of packaging materials. The aforementioned approach resulted in the tailoring of stimulated/controlled release of active agents and for specific target indicators. Another area of development is the use of innovative non-migratory materials in case of functional in package food processing [2].

## III. EDIBLE COATINGS

Edible films and coatings offer a huge future potential to satisfy the consumer desire for environment-friendly and natural foods. They do not completely replace traditional food packaging materials but provide extra functionalities to the food. Since these packaging materials are produced from agricultural wastes and/or commodities of industrial food production, thus impart value addition to biomass. Use of edible films and coatings can enhance the process of preservation of food in addition to reducing the traditional packaging both in cost and bulk. Edible coatings and films are developed from biopolymer based on hydrocolloids, such as polysaccharides, like cellulose, chitosan, starch, alginates, gums, pectin and proteins, from vegetable or animal origin (Table 1). The

basic functional properties of providing a barrier to gases and moisture the new innovative development includes the use of composites or blends to regulate the release of food additives and nutrients [6].

Table 1. Examples of application of antimicrobial films incorporated with antimicrobial agents for preserving fresh meat and processed meat products [3-5]

Antimicrobial substances	Products	Carrier film	Effects
Bacteriocins, nisin	Beef	PE	Reduction of <i>B. thermosphacta</i>
Nisin, lactacin	Beef	LDPE, PA	Inhibition of total aerobes and coliform bacteria
Amino polysaccharide	Meat products	Chitosan-based film	Inhibition of <i>S. aureus</i> and <i>E. coli</i>
Grape fruit seed extract	Fresh minced meat	Multilayered PE films	Inhibition of spoilage bacteria

#### IV. CONCLUSION

In order to successfully implement antimicrobial and intelligent packaging solutions in the meat industry, legislative concerns (eg, labels), economy and consumers' preferences should be considered. Applicability of novel and innovative packaging techniques is growing widely because of their health impact and thus resulted in reduced consumer complaints. In the near future, traditional packaging will be completely replaced by innovative food packaging techniques as these techniques are rapidly making their way into the global market.

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