

The contribution of innovative and intelligent packaging to the loss and generation of food waste.

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The basic food waste reasons

- ▶ A) Exceeding expiration date (46%)
- ▶ B) Market surplus (33,6%)
- ▶ C) They are no longer desirable, after some time because of the way they look. (17.0%)
- ▶ D) Other reason 3,4%.

Smart packaging protective function

- ▶ Reduce 3.5%
- ▶ The doubling of the minimum food life span 40%

Basic technologies used in smart packaging

- ▶ a) Codes
- ▶ b) Indicators
- ▶ c) Sensors

Codes

- ▶ Traceability
- ▶ Automation
- ▶ Theft protection
- ▶ Potential food falsification

Basic codes

The basic codes are:

- ▶ Barcodes,
- ▶ QR codes and
- ▶ RFID chips.

Barcodes

- ▶ cheap,
- ▶ practical and
- ▶ inventory controls



QR codes

- ▶ product traceability
- ▶ provide data for the right way of storage and distribution of products.



RFID chips

- ▶ very advanced,
- ▶ contactless,
- ▶ real time data carriers
- ▶ more expensive and need a more powerful electronic system network.

Indicators

- ▶ indicate the presence or absence of a substance,
- ▶ the greatness of a reaction among different substances or a specific substance concentration.

Time Temperature Indicators – TTI

- ▶ mechanical,
- ▶ chemical,
- ▶ electrochemical,
- ▶ enzymatic or microbial changes on a food product

Sensors

- ▶ identify the volatile products such as carbon dioxide or ammonia,
- ▶ oxygen,
- ▶ Ethanol
- ▶ hydrogen sulfide concentration.

Biosensor

- ▶ Biological materials such as enzymes, antigens, hormones or nucleic acids.
- ▶ pathogens such as Salmonells,
- ▶ E coli,
- ▶ Listeria and
- ▶ Campyolobacter.

Advantages and disadvantages of smart packaging.

- Smart packaging is practical and offers many benefits to the consumers, food producers and the whole of food industry.
- They are able to increase food safety and food waste.

- ▶ Codes allow better traceability of the supply chain.
- ▶ On the contrary, sensors are not widely used, yet mainly because of their high price.

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*Thank
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