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# Ecodesign in food packaging

## UNIT 3: concepts of food degradation and preservation methods

### Quiz and Assignment

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Quiz .....	2
Assignment .....	4



## Quiz

**1)** Alteration of food is:

- A. Process that causes the change of appearance and smell of foods, making them inedible.
- B. The presence of foreign bodies
- C. Process that causes loss of nutritional and sensory characteristics foods have fresh

*Answer A*

**2)** Food alteration can occur due to:

- A. The action of biological factors (enzymes and microorganisms).
- B. The action of physical factors (heat, light) and chemical (oxygen, water) or a combination of these.
- C. The action of physical factors (heat, light), chemical (oxygen, water) or biological (enzymes and micro-organisms) or a combination of these.

*Answer C.*

**3)** Enzymes (from Greek "enzyme" = yeast) are complex globular proteins from living organisms that catalyze the acceleration of the rate of biochemical reactions. However, in order to preserve and extend the shelf life of foods, it is usually necessary to inactivate the presented enzymes in food and on the surfaces of the packaging by:

- A. Thermal and / or physical treatments
- B. Chemical and / or biological treatments
- C. Chemical and / or thermal treatments.

*Answer C.*

**4)** Microorganisms are the names of all living beings that are not visible to the naked eye and to see them it is necessary to use a microscope. In connection with the alteration of foods the most important are:

- A. Bacteria and yeasts
- B. Bacteria, molds and yeasts
- C. Molds and yeasts

*Answer B.*



5) Factors influencing the growth of microorganisms in food are:

A.

- Moisture content, Water activity -Aw
- pH
- Available nutrients
- Physical structure of food
- Oxidation-Reduction Potential (redox)
- Presence of antimicrobial agents.

B.

- Temperature
- Relative humidity
- Carbon dioxide or oxygen
- Types and numbers of microorganisms in food

C.

Internal factors of the food (moisture content, water activity -Aw, pH, available nutrients, physical structure of food, redox potential, presence of antimicrobial agents and external factors (Temperature, Relative Humidity, Carbon Dioxide or Oxygen , Types and number of microorganisms in food)

*Answer: C*

6) Preservation by acidification uses preservatives such as vinegar, brine, alcohol and some oils. Technologies are:

- A. Smoke and drying
- B. Drying and pasteurization
- C. Marine and Marinating.

*Answer C.*

7). The influence of moisture content on the growth of microorganisms in food can be reduced by:

- A. Reduction of water activity, inhibition of microbial growth by drying or by the addition of dissolved substances (sugars, spices or salts).
- B. Cold Drying - Extracting water from frozen foods under vacuum



C.- reduction of  $A_w$  - inhibition of microbial growth by drying, by smoke or by the addition of dissolved substances (sugars, spices or salts), enrichment of solutions - sugar for fruits and salt for meat and fish, cold drying - water extraction from frozen foods under vacuum.

*Answer C*

8) Which packaging system has been created to prolong the life of the food:

A. Controlled atmosphere packaging.

B. Glass jars.

C. Bottles of metal.

*Answer A*

## Assignment

1. Develop and briefly outline the principles of technologies to limit food damage (See also video unit 3 Prez)

