



Innovative High pressure process to increase the preservation
of ready-to-eat Organic FOOD

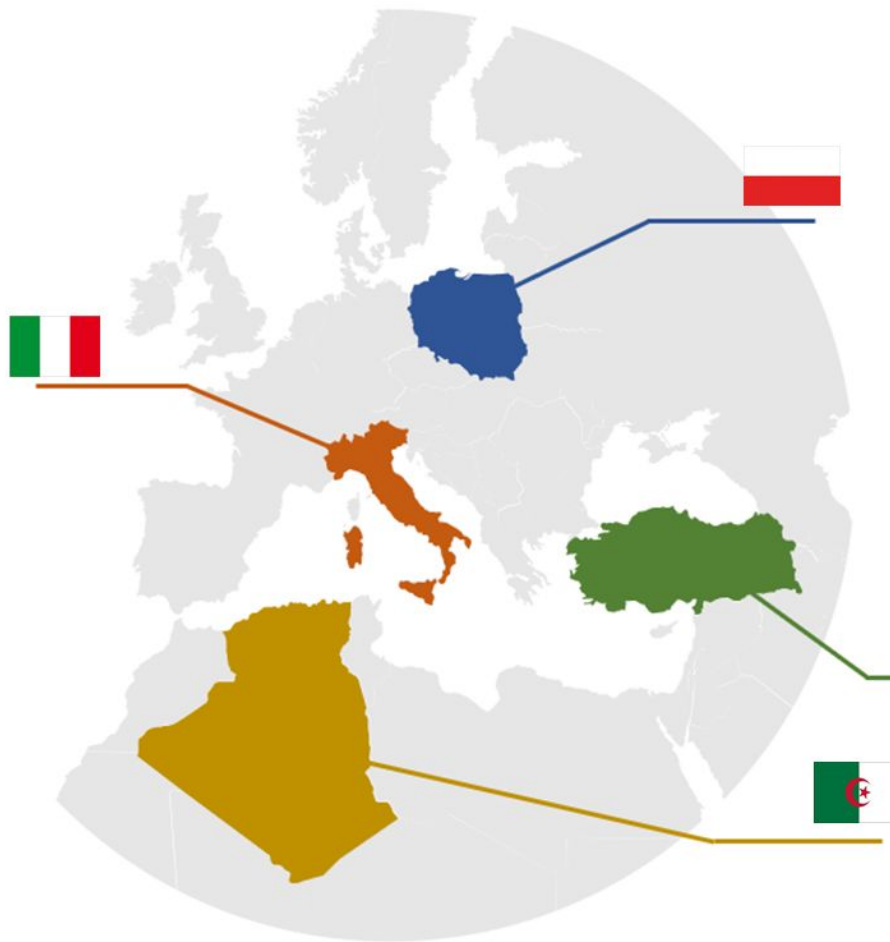


The consortium



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Patent: “New method for food pasteurization”

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IT201700098045A1



Granted



EP3675652



Pending



US20200196619



Pending



CN111093385

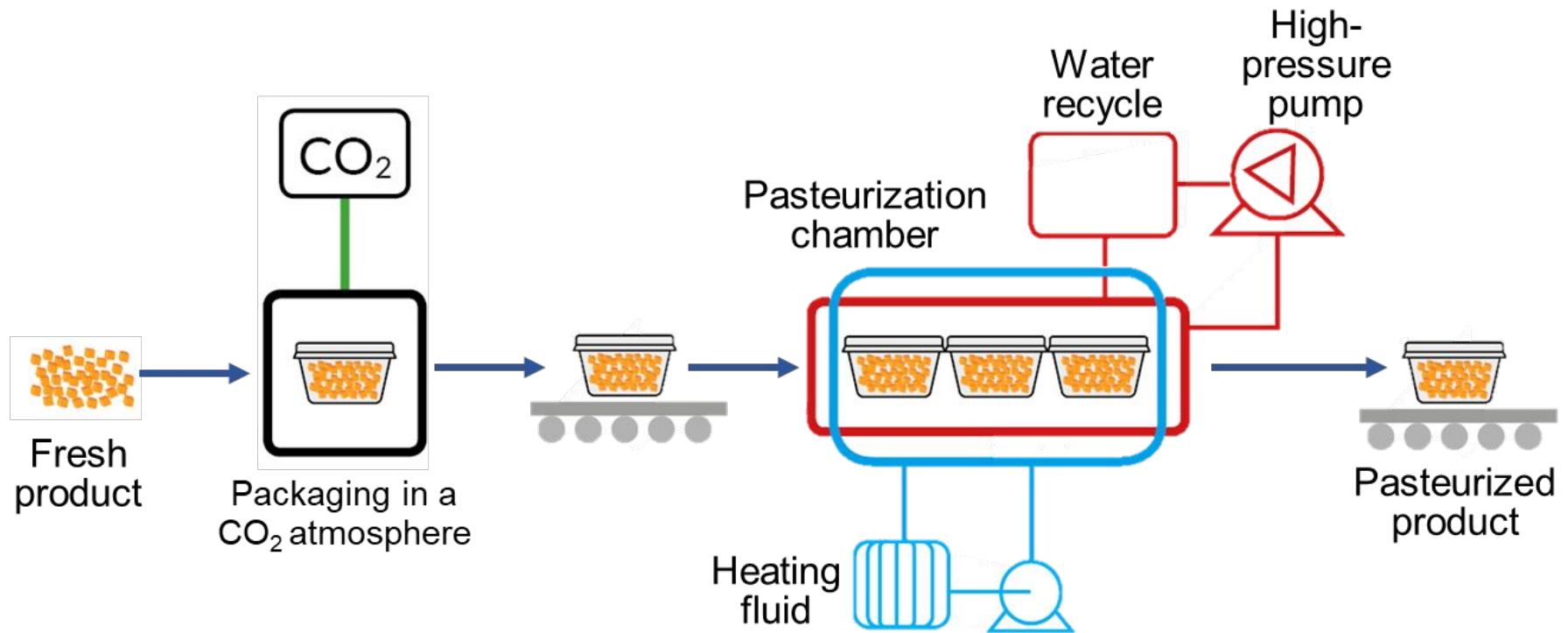


Pending



Project outline

OVERALL GOAL: To foster the whole fresh vegetable food chain via the development of a new food pasteurization technique, based on the use of high pressure CO₂ at low temperature



1st year

- Identification of potential products
- Small plant design and construction
- Process optimization

2nd year

- Identification of 3 best candidate products
- Microorganism and enzyme inactivation
- Product characterization (antioxidant activity, sensorial quality)

3rd year

- Medium plant design and construction
- Consumer acceptance
- LCA - LCC analyses
- Validation by SME and farm

Project plan

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18
WP1: Products selection and optimization																		
WP2: Small/medium scale apparatuses design																		
WP3: Microbial safety studies																		
WP4: Quality and sensorial studies																		
WP5: Bio-accessibility																		
WP6: Economic sustainability and LCA																		
WP7: Dissemination and communication																		
WP8: Management and coordination																		

3 food categories



Fruits



Vegetables



Seeds

Selection criteria:

- Seasonality
- Market potential
- Geographic location
- Biodiversity
- Difficulty of preservation
- Attitude to resist high pressure



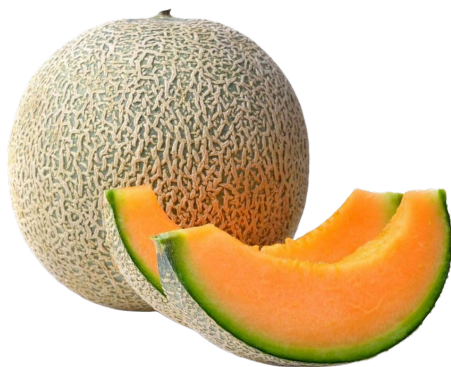
**Cooperation of the
entire CONSORTIUM**

76 tested products

3 SELECTED PRODUCTS



Squash



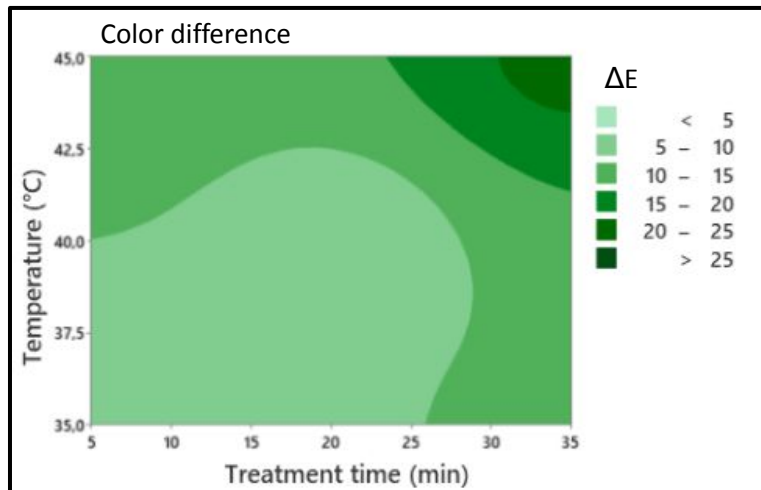
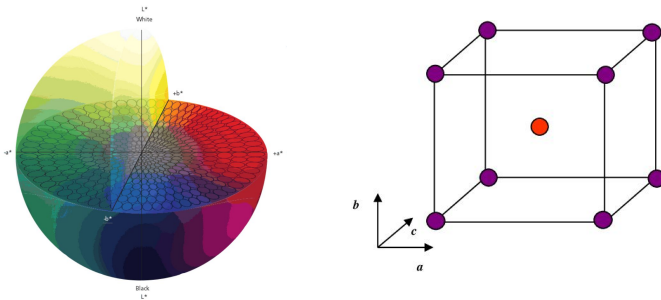
Melon



Almond



→ Visual aspect



→ Microbiological inactivation

- Study of the effect of the process parameters on different microorganisms inoculated on a synthetic matrix
- Parameters optimization on the natural flora and inoculated *E.coli* on the natural matrices



→ Visual aspect

→ color change minimization after the treatment

$$\Delta E < 10$$

color change

→ Microbiological inactivation

→ effect of the process conditions (T, P and t) on the inactivation of the natural flora and on inoculated pathogenic indicators

$$> 3.5 \text{ Log CFU/g}$$

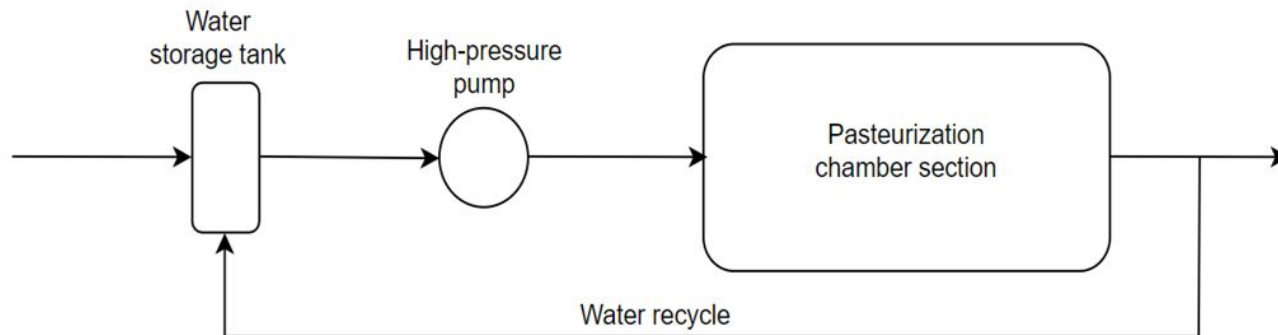
inactivation of pathogenic indicator

→ Packaging material

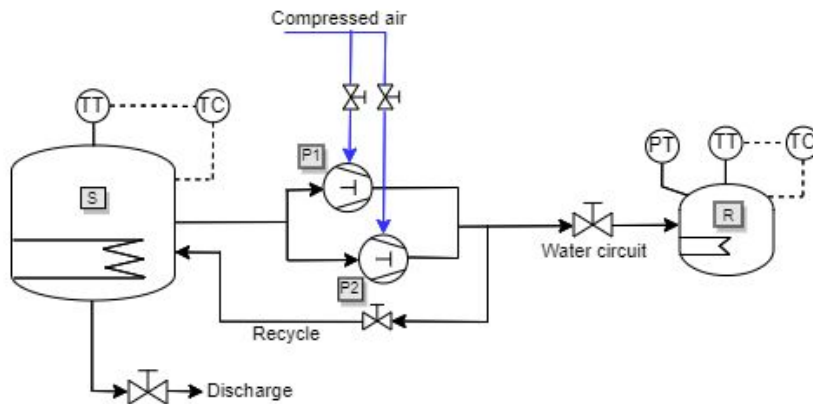
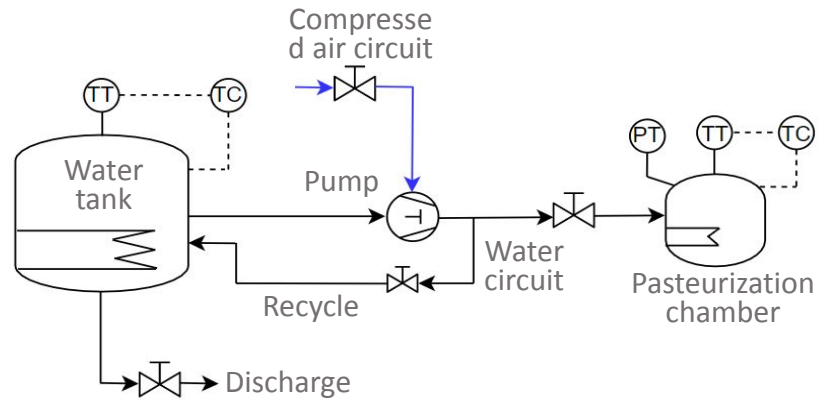
→ identification of resistant and recyclable materials



- 2 small-scale and 1 medium-scale plant
- to be used from project partners and SMEs or organic farmers
- cheap and user-friendly



→ Small plants



→ Semi-industrial plant

- 90L chamber
- Semi-automatic
- Easily-scaled
- User-friendly
- Relatively inexpensive



- Finalization of process optimization
- Shelf life studies of the products in function of:
 - WP3 microbiological safety
 - WP4 enzymatic activity
antioxidant, nutritional and sensory properties
 - WP5 bioaccessibility
- Economical and environmental sustainability WP6
- Company engagement with workshops

- Material supplying delays
 - training activities in Italy and preliminary tests carried out with other available plants
- Difficulties in plant deliveries
 - exchange periods between the partners and treated product delivery
- Budget issues for the Algerian team (Oran University)
 - part of the activities carried out with the support of other partners





THANK YOU FOR THE ATTENTION!

