

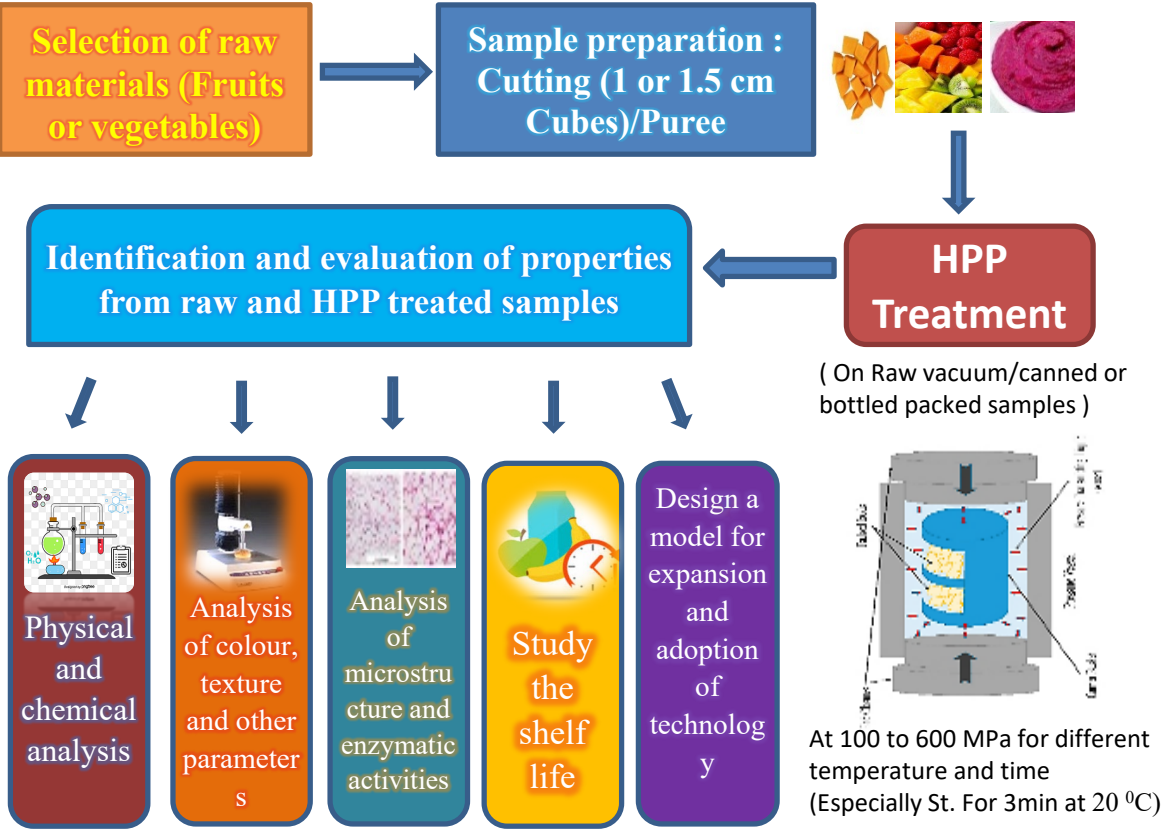


Dhenge Rohini Vijay (rohinivijay.dhenge@unipr.it)
Department of Food and Drug, University di Parma, Italy
Tutor: Prof. Tommaso Ganino, Prof. Massimiliano Rinaldi, Prof. Barbanti Davide

STATE OF ART

In recent years, technical advancements in food production with innovative technologies improved the fruits and vegetables processing, meeting the growing consumer’s interest in healthy, safe and sustainable foods (Cardello et al., 2007). In this optic, among innovative technologies, High hydrostatic pressure processing (HPP), based on the use of pressures between 100 and 1000 MPa, is generally proposed as a non-thermal alternative to traditional pasteurization, able to stabilize foods without affecting their quality (Chauhan et al., 2019). When applied to fruit or vegetable products, HPP has a mild or no impact on low-molecular-weight compounds, related with the sensorial and healthy properties. At the same time, HPP is reported to have an impact on other quality attributes such as texture, colour and flavour that generally depends on both process conditions and type of plant tissue (Oey et al., 2008). HPP influences the microstructure and texture of vegetables and fruits in two different ways; mechanical and biochemical. The compression and decompression steps during processing lead to deformation of cells, cell wall and membrane damage and tissue disruption resulting in turgor loss and loss of firmness (Araya et al., 2007; Basak and Ramaswamy,1998). Thus, several examinations try to identify a “Place on the processing scale” in terms of quality structure perception of HPP technology.

Abstract



Objectives

- 1.To study effects of HPP on fresh product quality as micro-structural and textural properties of some selected fruits and vegetables compared with conventional processing
- 2.To study the pressure, time and temperature kinetics for to address other issues regarding the quality and how to extend the shelf life
- 3.To design model for expansion and adoption of technology
- 4.To understand whether the HPP could be commercial application for fruits and vegetables or not

WORK PLAN: Gantt chart

Activity	Months	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	
Collection of scientific literature																																						
Selection of raw material																																						
HPP technology: pressure kinetics study of the modifications of treated vegetables																																						
HPP technology: temperature kinetics study of the modifications of treated vegetables																																						
HPP technology: time kinetics study of the modifications of treated vegetables																																						
Experience abroad																																						
HPP technology: evaluation of shelf-life of the product after the application of the best HPP conditions																																						
Design a model for expansion and adoption of technology																																						
Paper publication -Thesis preparation																																						

Results: 2 papers submitted 2 papers in preparation 2 Participations to International conferences (oral/poster presentation)

References

1.Araya, X. I. T., Hendrickx, M., Verlinden, B. E., Van Buggenhout, S., Smale, N. J., Stewart, C., & Mawson, A. J. (2007). Understanding texture changes of high pressure processed fresh carrots: A microstructural and biochemical approach. *Journal of food engineering*, 80(3), 873-884.

2.Basak, S., & Ramaswamy, H. S. (1998). Effect of high-pressure processing on the texture of selected fruits and vegetables. *Journal of Texture Studies*, 29(5), 587-601.

3.Cardello, A. V., Schutz, H. G., & Leshner, L. L. (2007). Consumer perceptions of foods processed by innovative and emerging technologies: A conjoint analytic study. *Innovative Food Science & Emerging Technologies*, 8(1), 73-83

4.Chauhan, O. P. (Ed.). (2019). *Non-thermal processing of foods*. CRC Press

5.Oey, I., Van der Plancken, I., Van Loey, A., & Hendrickx, M. (2008). Does high pressure processing influence nutritional aspects of plant-based food systems? *Trends in Food Science & Technology*, 19(6), 300-308..