ADVERSE EFFECTS OF THERMAL FOOD PROCESSING ON THE STRUCTURAL, NUTRITIONAL AND BIOLOGICAL PROPERTIES OF PROTEINS

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FDP aims

- Find out what these effects of thermal processing will be on proteins.
- Which protein properties will be most affected and in what way?
- All kinds of modifications that will take place in proteins structure, which will change their properties.
- Evaluate new non-thermal food processing techniques.
- Do they have a more beneficial impact on protein and manage to maintain their essence?

1. MAIN REACTIONS CAUSED BY THERMAL PROCESSING THAT DIRECTLY OR INDIRECTLY AFFECT THE STRUCTURE AND PROPERTIES OF PROTEINS

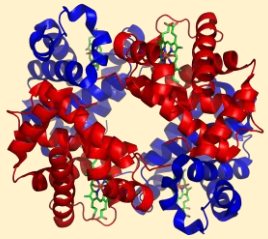
- Maillard Reaction (indirect effect)
- Lipid Oxidation (indirect effect)
- Protein Oxidation (direct effect)

2. THERMAL FOOD PROCESSING

- Application of ↑ T (+ effects)
- Application of ↓ T (- effects)

3. MODIFICATION OF THE STRUCTURE OF PROTEINS DURING THERMAL PROCESSING

- Where does the change occur?
- Modifications of the structure to improve the functionality of proteins: chemical, enzymatic and physical methods.



4. EFFECTS OF STRUCTURAL MODIFICATION ON THE FUNCTIONAL, NUTRITIONAL AND BIOLOGICAL PROPERTIES OF FOOD PROTEIN

- Functional properties (ex. WRC): organoleptic quality
- Nutritional and digestive properties: amino acids
- Biological effects of modified proteins: organs and diseases

5. HOW CAN WE REDUCE PROTEIN MODIFICATION DURING FOOD PROCESSING? ALTERNATIVE PROCESSES

- ✓ HHP
- ✓ Pulsed Light
- ✓ Ultrasound
- ✓ Pulsed Electric Field
- ✓ High Voltage Electric Field
- ✓ Cold Plasma Technology
- ✓ Irradiation

Conclusions

- Thermal food processing can cause beneficial effects on proteins for the food industry, but also detrimental to human health.
- The modification of the protein structure is what changes its general properties.
- Study, research and innovation are needed in order to delve into new techniques that are getting better and better and with fewer negative effects on proteins to ensure their maximum quality.