

Study of the application of the 3D food printing for people with dysphagia in a hospital environment.

Goals

- 1. To know the impact of the dysphagia in the actual society.
- 2. Carry out a study with real information about dysphagia prevalence.
- 3. To know the actual treatment based in the food texture modification.
- 4. Study of the 3D food printing benefits as alternative for people with dysphagia with the preparation of 3D dishes and carry out sensorial analysis with patients and medical staff.

Dysphagia

- Swallowing disorder or Swallowing difficulty
- Symptom of other diseases. Temporary or chronic.
- Affects the security and effectiveness of swallowing.
- Types of dysphagia: Orofaringeal and Esofagical dysphagia

Consequences

Medical: <ul style="list-style-type: none">• Malnutrition• Dehydration• Aspiration	Psicological: <ul style="list-style-type: none">• Social repercusion• Disminució plaer de menjar	Economical: <ul style="list-style-type: none">Increment of cost for:<ul style="list-style-type: none">• Hospital stay• Malnutrition
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People affected

Between 1.7 to 11% of the European population.

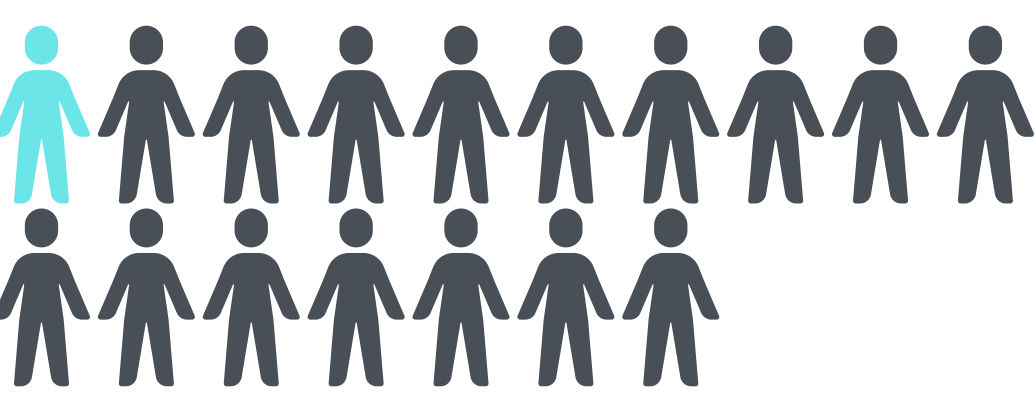


Figura 1: Population that can be affected by dysphagia

Target

Elderlies
People with neurological problems
People with oncological diseases

Table 1: Total cases of dysphagia in Sant Joan de Déu Hospital (Manresa), counting the hospital admissions and the external consultation.

	Dysphagia Cases
Hospital admissions	505
External consultation	135
Total cases	640

Main treatment

Swallowing therapy and texture modified foods and thickened liquids.



Figure 2: Puree

Sant Joan de Déu Hospital (Manresa) diets for people whit swallowing disorders:

1. Easy to cheaw dysphagia menu
2. Dysphagia grind menu
3. No double texture menu
4. Basic grind group

Diets for people whit dysphagia: 30 - 55 menus for meal

3D food printing and dysphagia

Can be a better solution?
Can be an alternative?
There is enough information?

Figura 3: 3D printed chicken, carrot and rice



Nutrialth3D

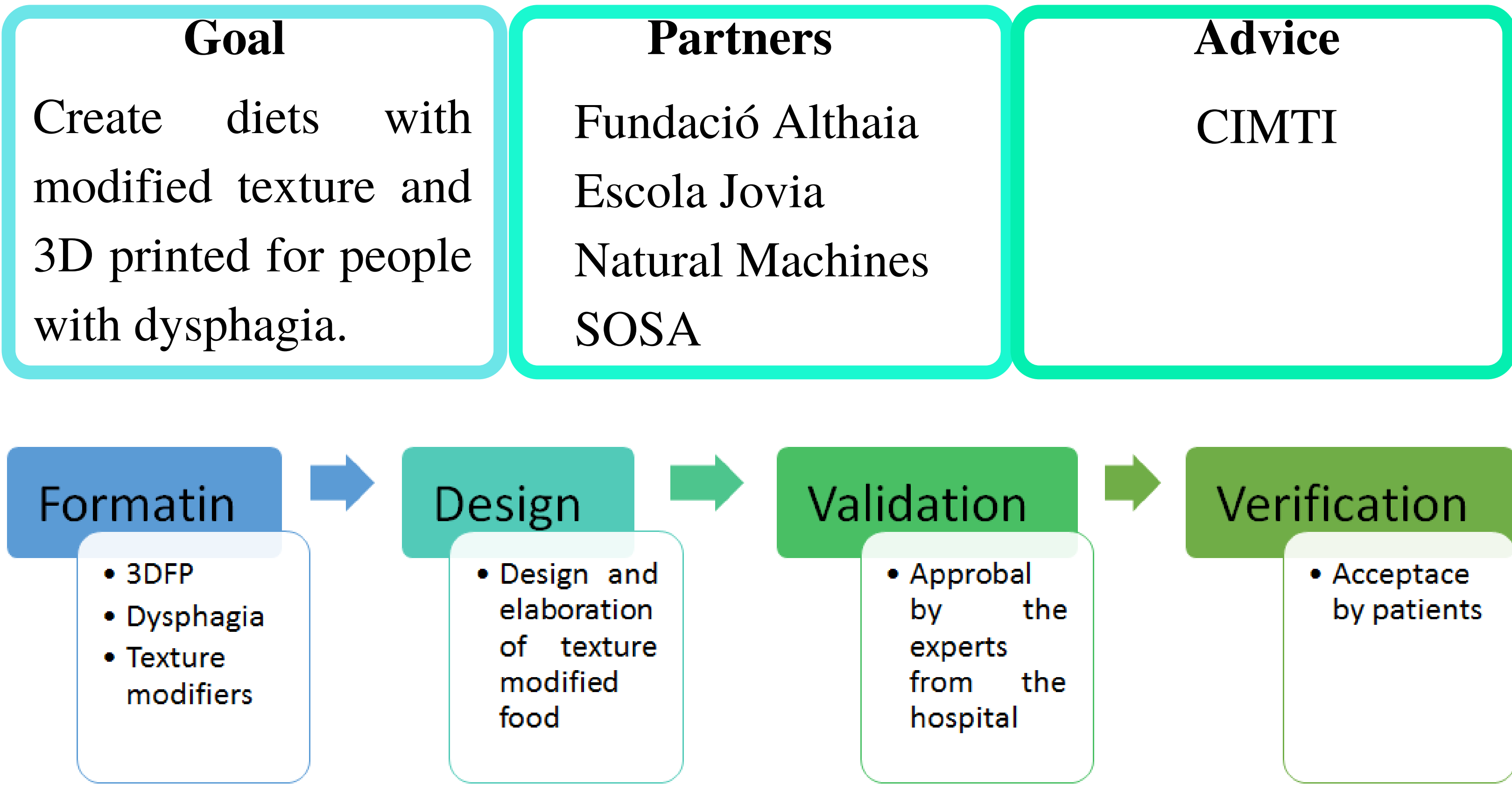


Figure 4: Nutrialth 3D Phases

Results

Design
Lasagna
"Suquet de peix"
Potato omelette
Rice pudding
Caesar salad
"Patates braves"
Croquette

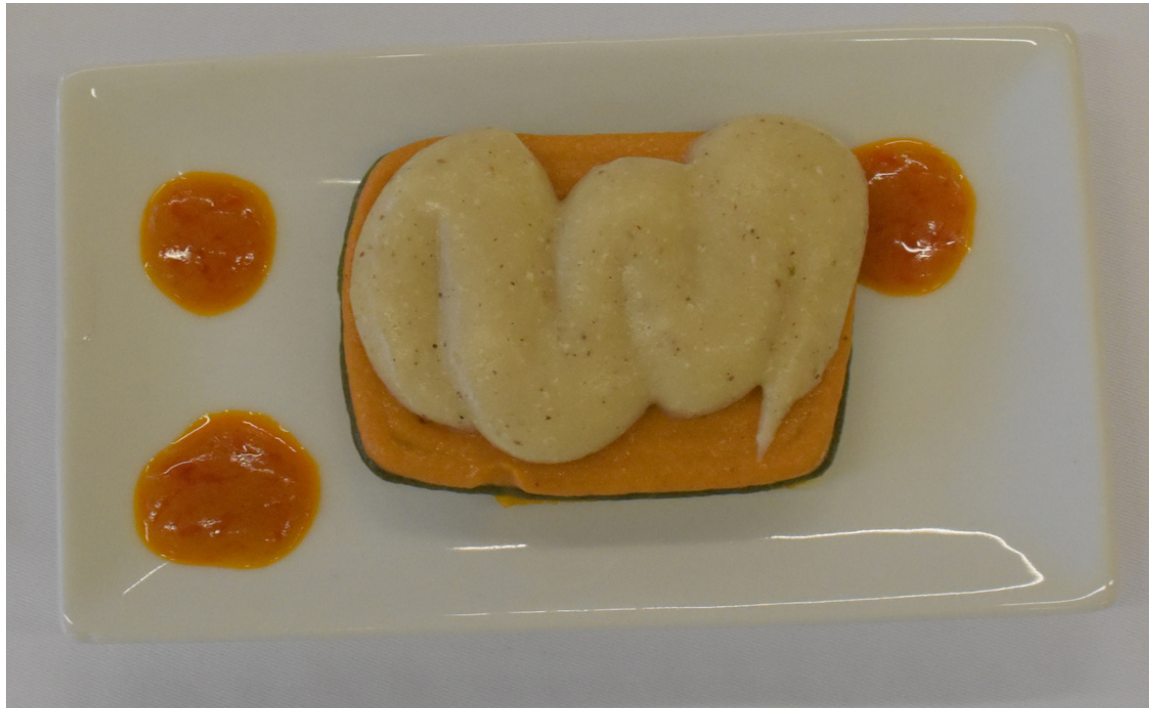


Figura 5: 3D printed lasagnya

Validation

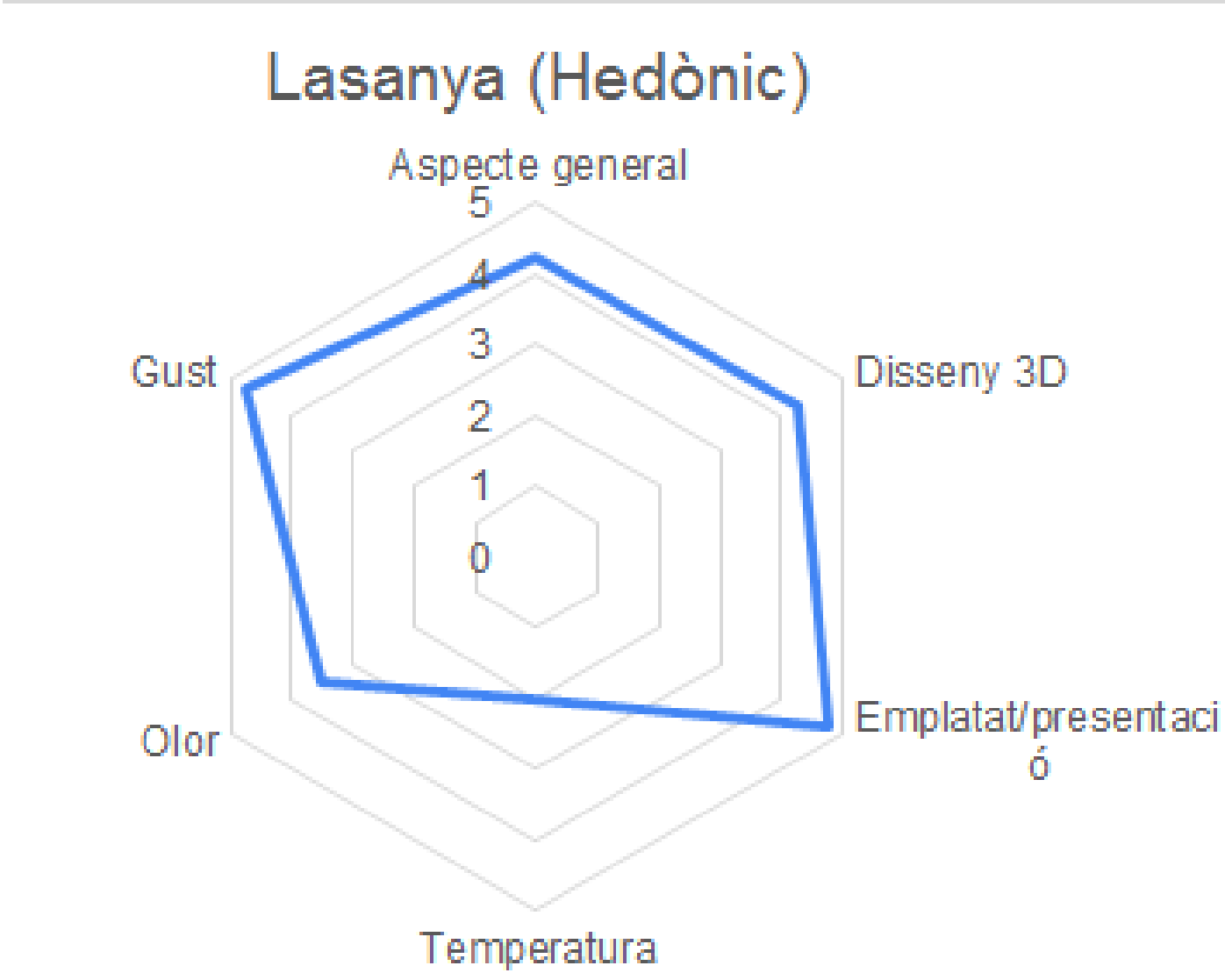


Figure 5: Lasagna acceptance results

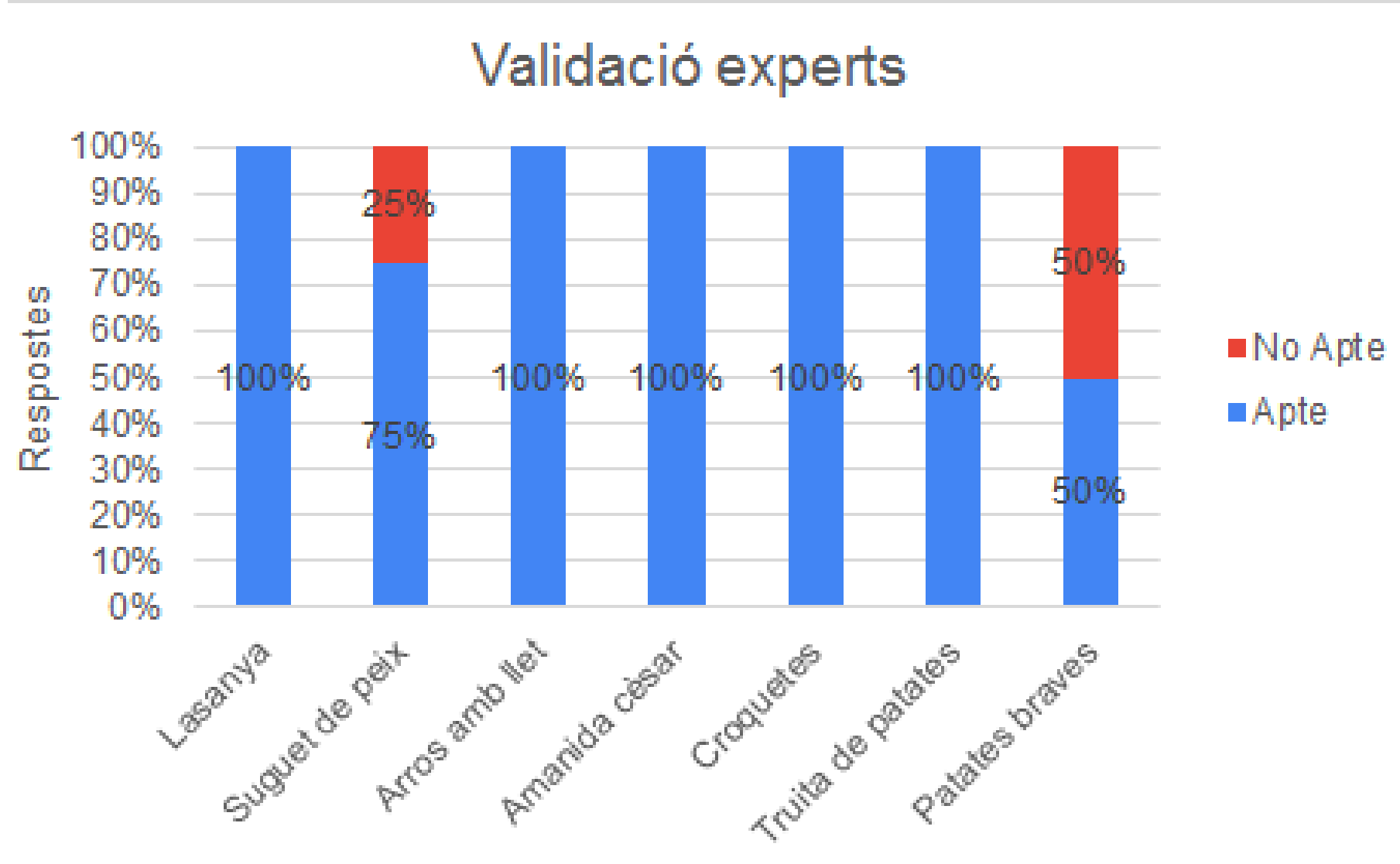


Figure 6: Dishes validation results

Verification



Figure 8: A resident from the "Centre de Disminuïts físics del Bages" tasting Lasagna.

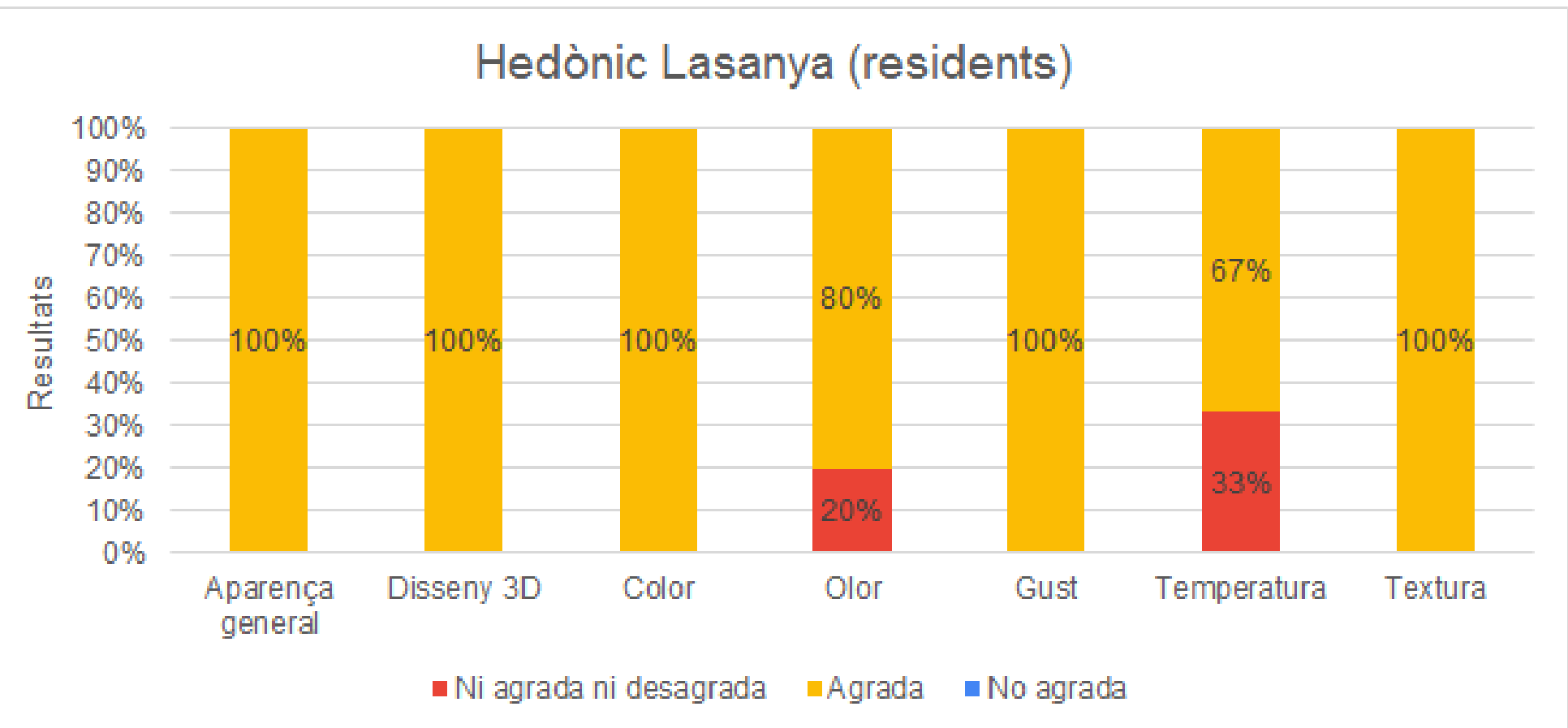


Figure 7: Acceptation results from lasagna sensorial analysis done by the residents.

Conclusions

3DFP can be an alternative to improve the psychological and nutritional status from people whit dysphagia. Nowadays, there are a lot of gaps about his aplicacion in this cases. For this reason, Nutrialth3D works to berify that the use of 3DFP can be useful for this persons and implement it as alternative. Until now, Nutrialth3D has worked on the verification and acceptability of 3DFP . But they have to continue working on the verification of the benefits and on the design and elaboration of new foods.