

Development of Gastronomic strategies for the application and valorization of new inverse emulsions of vegetable origin

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Abstract:

The main objective of this study was to develop gastronomic applications with the use of 5 innovative emulsions prototypes (which preserve expensive / seasonal raw materials and value surplus/regional by-products), appealing to the final consumer. 34 gastronomic compositions were obtained and 10 were tested in a tasting gastronomic event; consumers appreciated positively all compositions. There was a substantial increase in purchase intention for most samples after tasting of the delicacies made with them.

Introduction:

Pushed by the industry needs and also by the demand of consumers, the use of surplus production (primary and food processing sectors) and by-products are a trend and, objectively, play an important role in terms of local producers income; local products valorization and constitutes one of the chains of the circular economy, which is targeted at making optimum use of natural resources, raw materials and products and re-using them (Rood et al., 2017; EMF, 2018). These challenges provide an opportunity for the development of new products and the creation of new market niches.



Fig1. Picture of tested emulsions and of a gastronomic application

Emulsions in the form of spreads (Fig. 1) have, like traditional butter, several applications: breaded, toasted, crackers and other bases, and can be used as an appetizer or accompaniment. Mustards (Fig. 1) and also spreads can be used for preparing other foods including cold meat, roast beef and grilled meat or fish. This versatility makes them potential bases for new food products both for its formula ingredients and potential gastronomic applications.

Materials and Methods:

- Five emulsions were analysed - 3 strawberry and 2 pepper (one red and one yellow) (Fig 3A) processed differently, with aqueous vegetable phase and 2 mustards with red fruits or beet (Lima et al, 2017).
- A sensory evaluation was carried out (hedonic scale 1-9) with a panel of tasters (9 food professionals) (Fig 3B).
- For the consumption potential and purchase intention: a 5-point scale was used
- A recipe set was developed based on previous results; with the online Foodpairing® tool and also based on culinary know-how (Fig 3C), creative/aesthetic talent of the researcher.
- A script of the tasting menu was established (10 recipes), and also a test book with parameters of acceptance / purchase intention /marketing / use potential.
- An acceptance test was carried out in a tasting lunch in a pedagogical restaurant for 40 consumers (Fig 2E).

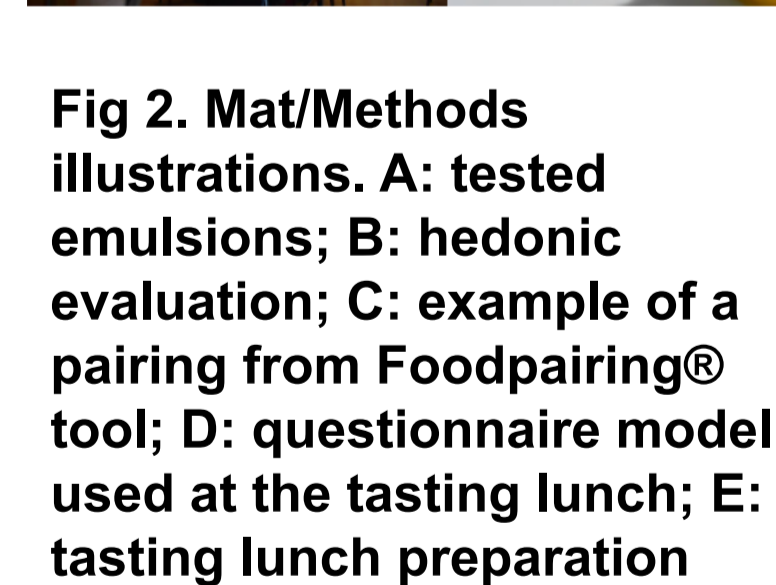
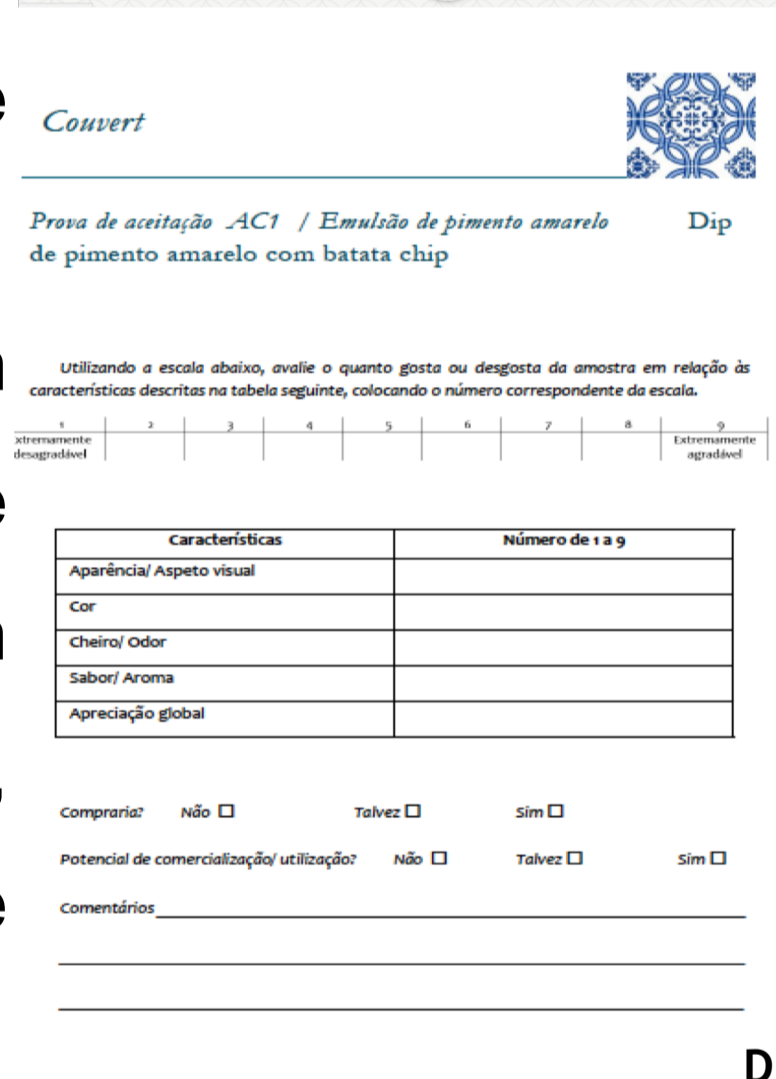


Fig 2. Mat/Methods illustrations. A: tested emulsions; B: hedonic evaluation; C: example of a pairing from Foodpairing® tool; D: questionnaire model used at the tasting lunch; E: tasting lunch preparation

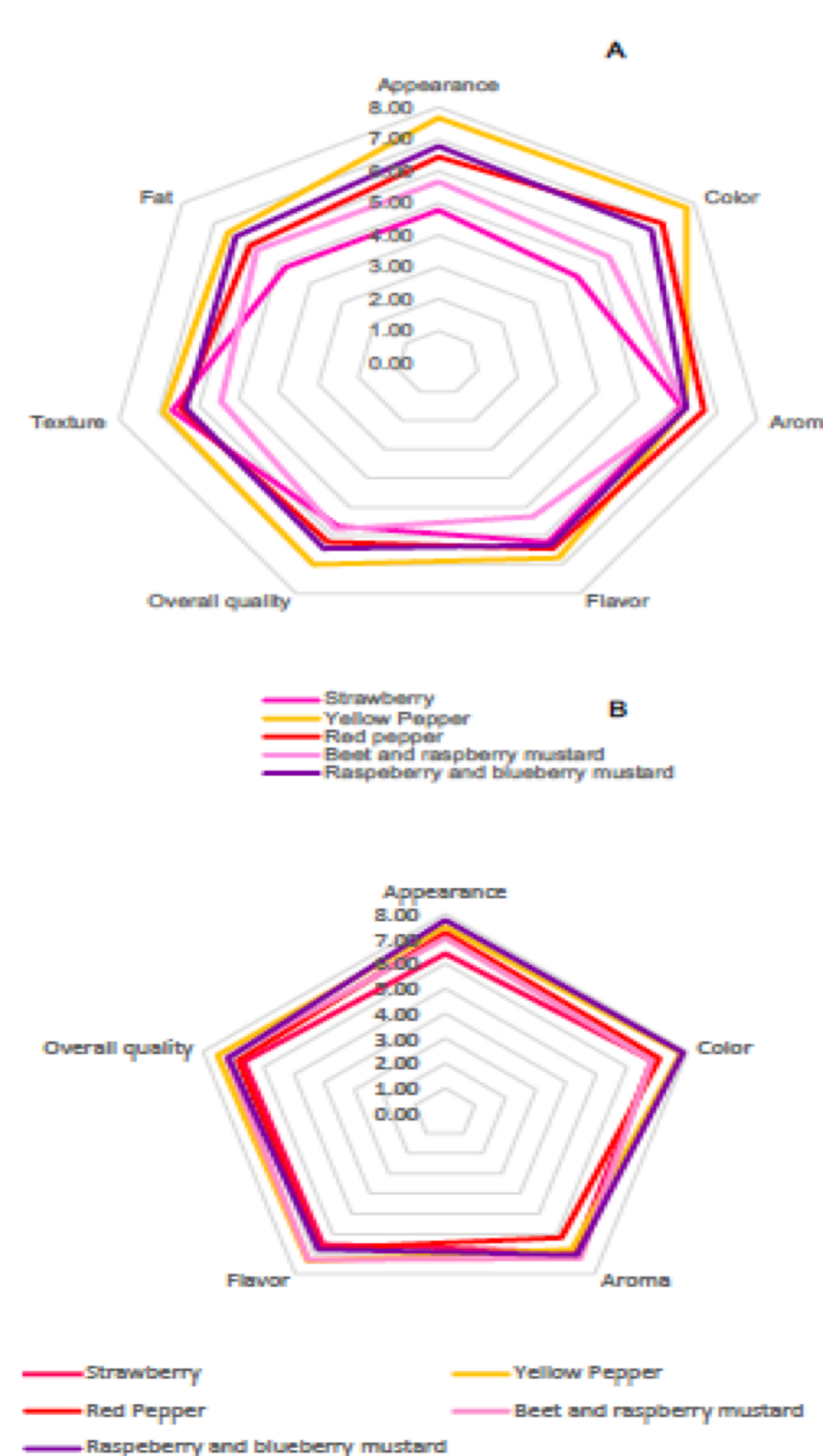


Fig 3. Acceptance evaluation overall and on specific parameters, analyzed by (A) panel experts and (B) consumers at tasting lunch

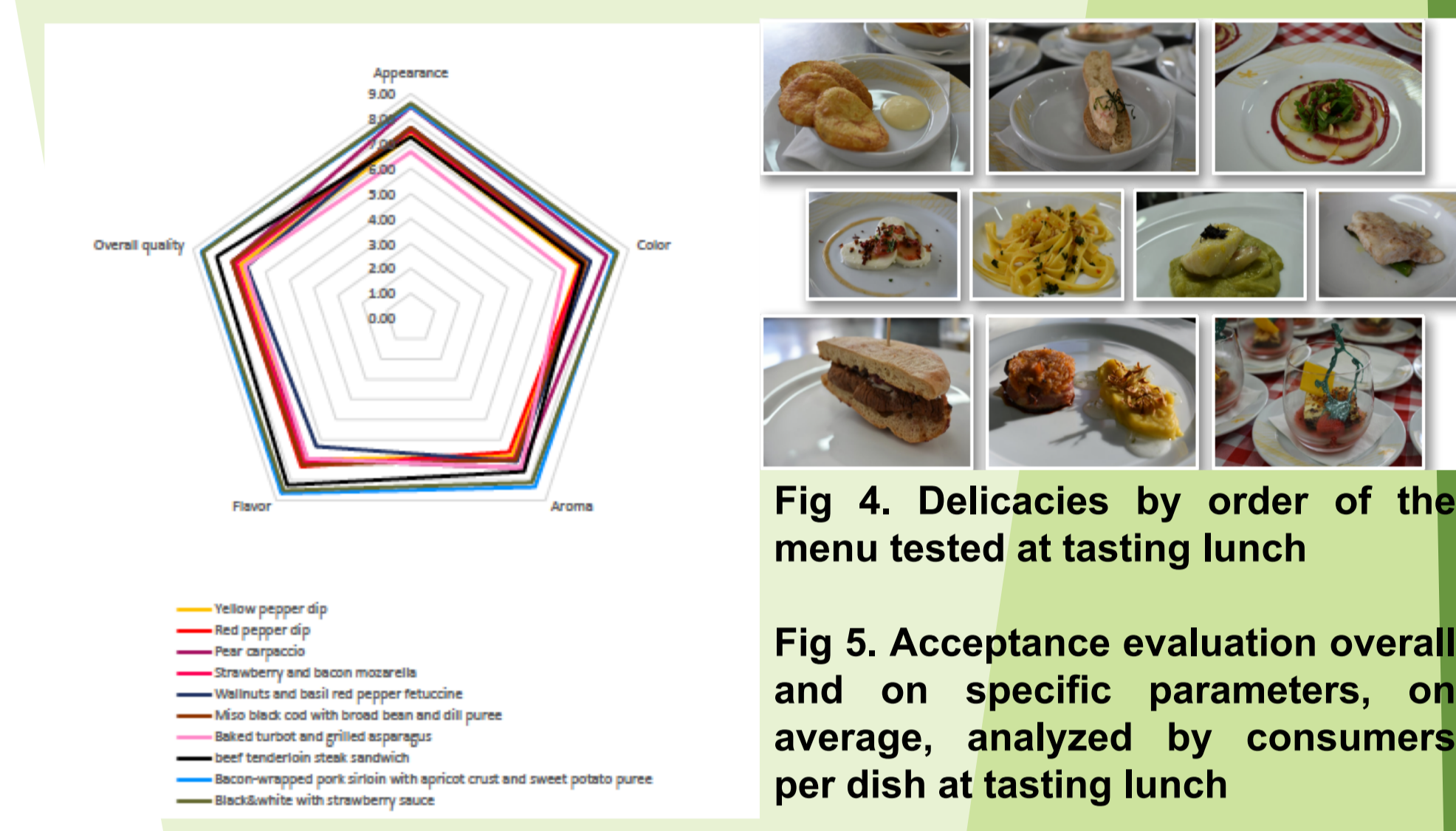


Fig 4. Delicacies by order of the menu tested at tasting lunch

There was a substantial increase in purchase intent for most samples after tasting of the delicacies made with them: most tasters would buy the creams analyzed and see commercialization potential in all emulsions (see Fig 6 as an example).

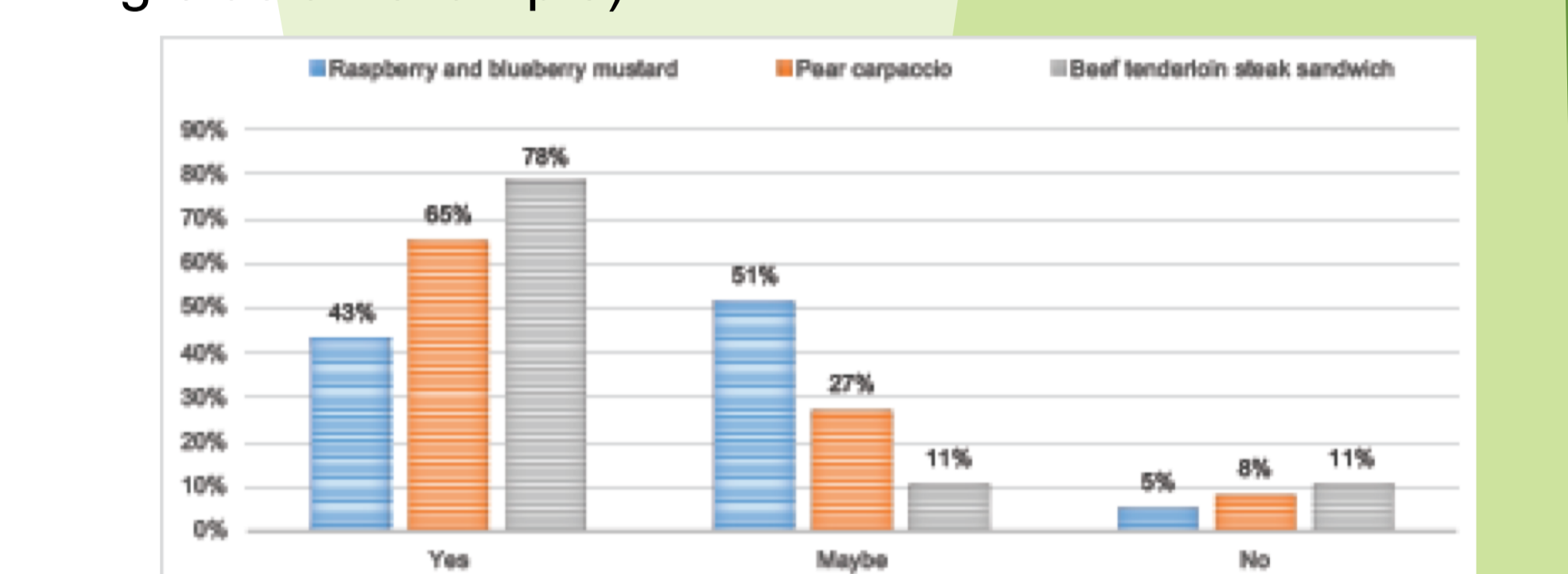


Fig 5. Acceptance evaluation overall and on specific parameters, on average, analyzed by consumers per dish at tasting lunch

Fig 6. Marketing potential of raspberry and blueberry mustard, in percentage, analyzed by the tasters of the technical lunch and the variation after the tasting of the delicacies made with the same

Conclusions:

- Hedonic evaluation and consumer testing have shown that the development of culinary applications after product innovation is very important because it can result in the acceptance or not of the product by the final consumer, whether it belongs to the Food Service or as a domestic consumer.
- Global innovation implies consumer acceptance and culinary application education.

References:

EMF. 2018. Cities and the circular economy for food. UK: Ellen MacArthur Foundation. <https://www.ellenmacarthurfoundation.org/assets/downloads/Cities-and-the-circular-economy-for-food-1.pdf>.
 Lima, M. et al. 2017. <http://newfoodnewtech.ipsantarém.pt/wp-content/uploads/2019/01/222-Abstract-p149-2017-11-LIBRO-XXIII-ENCONTRO-FINAL-Galego-portugues-p-149.pdf>.
 Rood T., et al. 2017. Food for the Circular Economy. PBL Netherlands Environmental Assessment Agency, The Hague.

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Results:

The emulsions and all developed and tasted gastronomic proposals had positive appreciation (Fig 3- Fig 5). The opinion of the chefs was quite important and useful, but not always coincident with the ingredients proposed by the application of Foodpairing® (data not showed).