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1. CONTEXT OF THE STUDY

Seafood rice is a widely recognized symbol of Portuguese gastronomy, deeply rooted in cultural identity and associated with coastal culinary traditions.

However, the increasing prevalence of seafood allergies, combined with environmental concerns such as overfishing, has raised the need to rethink such dishes in a more inclusive and sustainable way.

This work proposes a plant-based reinterpretation of seafood rice, aiming to preserve its sensory identity while eliminating allergenic ingredients and expanding accessibility to a broader audience, including vegetarians and individuals with dietary restrictions.



2. R&D METHODOLOGY

The development followed an experimental and iterative approach, combining traditional culinary practices with food science tools.

The original recipe was analyzed to identify the functional role of seafood in flavour, texture and visual composition. Based on this, two plant-based analogues were developed, inspired by shrimp and fish.

These analogues were formulated using tofu, starch-rich ingredients and seaweed infusions, combined with hydrocolloids such as agar, xanthan gum, carrageenan and gellan to reproduce structure, elasticity and thermal stability.

The dish was assembled following the traditional preparation method, including sautéing aromatics and cooking rice in a seaweed-based broth, allowing the integration of flavour and texture within a familiar culinary framework.

3. ENSURE THE QUALITY

Sensory evaluation was conducted with six untrained tasters using a 9-point hedonic scale.

All evaluated attributes showed high acceptance, with average scores above 8, including appearance (8.33), aroma (8.17), flavour (8.17), texture (8.33) and overall appreciation (8.50).

These results indicate a strong sensory performance of the plant-based formulation, particularly in terms of flavour balance and textural coherence.

The combination of seaweed, miso and spices contributed to a convincing marine and umami profile, while the hydrocolloid system ensured structural stability and a pleasant mouthfeel.

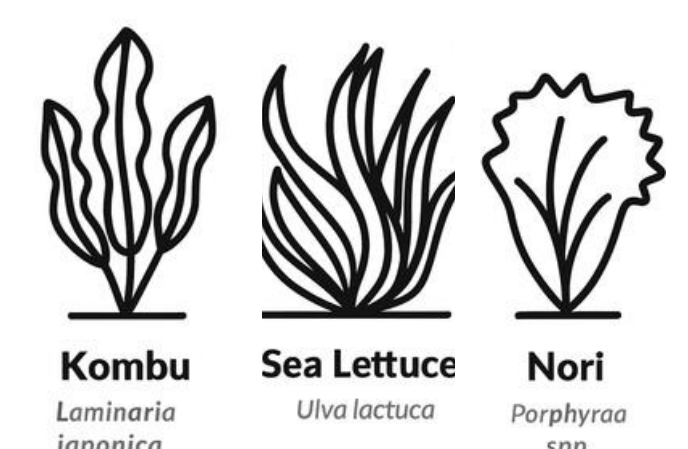
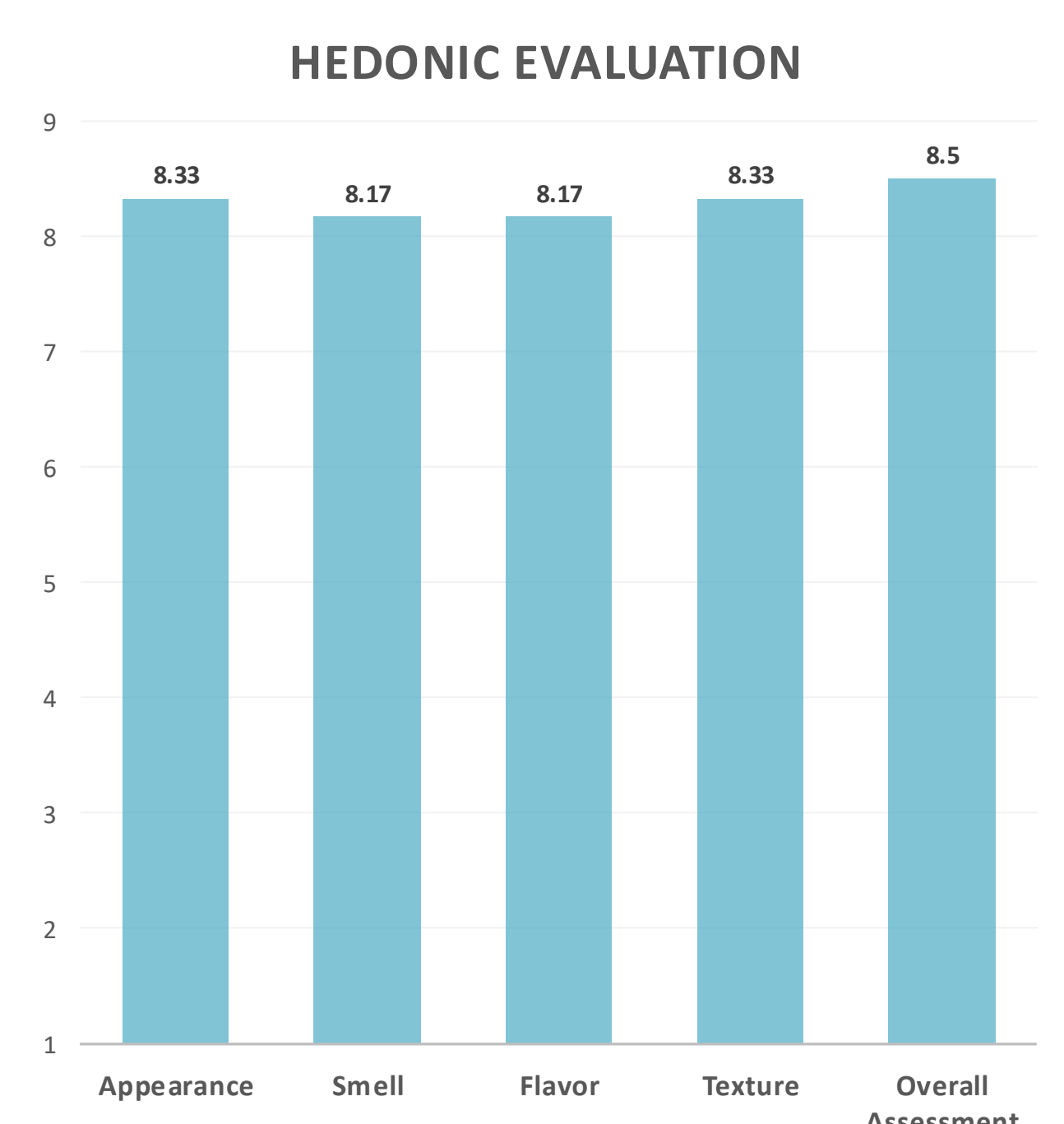
4. CONVIVIAL MEAL

Beyond its technical development, the dish was conceived as an inclusive and culturally grounded gastronomic experience.

Traditional seafood dishes often exclude individuals with allergies or specific dietary choices, limiting their participation in shared culinary contexts. By removing seafood while preserving key sensory elements, this reinterpretation allows a broader audience to engage with a culturally significant meal.

The use of seaweed and plant-based analogues not only replicates flavour and texture but also maintains the visual and emotional references associated with the original dish.

In this sense, the project reinforces the idea that inclusivity in gastronomy is not about replacing tradition, but about expanding it – ensuring that cultural food experiences remain accessible, relevant and shared.



5. CONCLUSIONS & PERSPECTIVES

The results demonstrate that a plant-based reinterpretation of seafood rice is both technically feasible and sensorially effective.

Hydrocolloids played a key role in reproducing structural and textural properties, while seaweed-based systems enabled the recreation of marine flavour profiles without the use of seafood.

This approach highlights the potential of combining culinary tradition with scientific knowledge to create innovative and inclusive dishes.

Future developments may focus on refining texture of the plant-based seafood analogues, expanding flavour systems and applying similar strategies to other traditional seafood-based recipes.