THE USE OF DIET ENCAPSULATION AS A VALUABLE TOOL TO IDENTIFY THE POTENTIAL OF NOVEL FISH FEEDS

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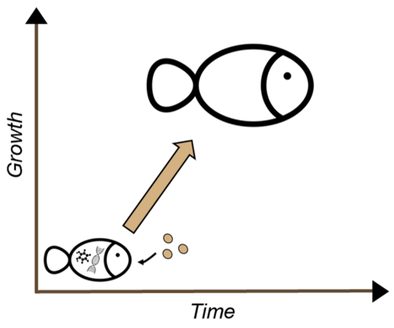
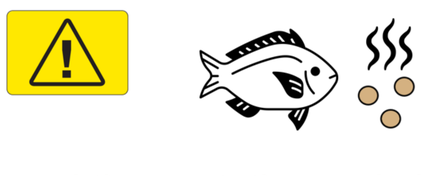
The effects of new diets on fish are often performed using growth trials

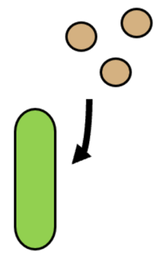


This methodology does not consider fish preferences



and the gustative and olfactory properties of traditional extruded or pelleted diets (texture, taste, odour and flavour) can affect feed intake

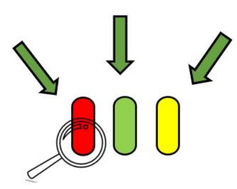
Diet encapsulation allows fish to choose which feed most suits their nutritional needs, without the interference of chemosensitivity



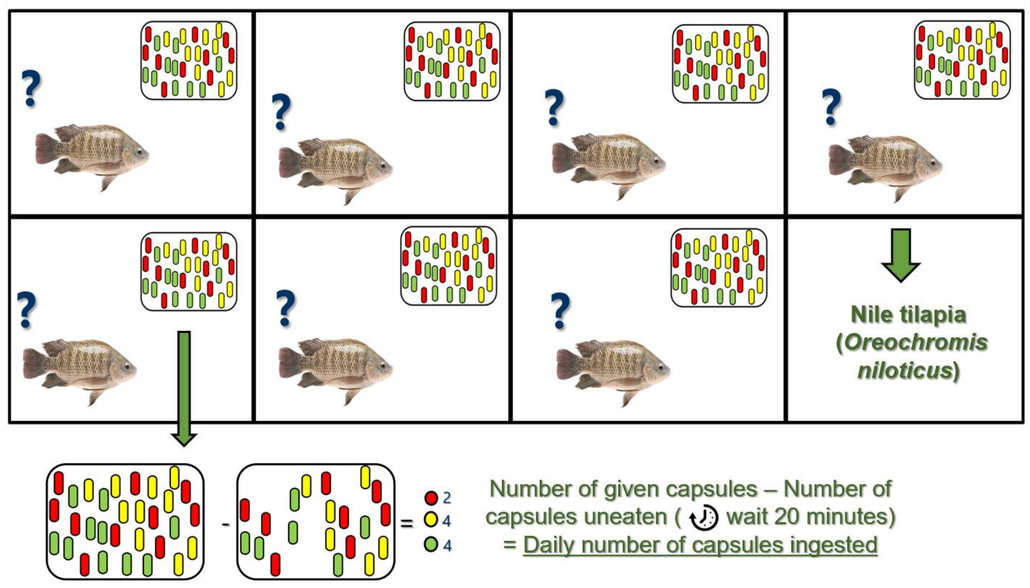
Understand the behaviour response and feed preference of Nile tilapia (*Oreochromis niloticus*), using the self-selection method of **diet encapsulation,** towards the acceptability of innovative diets based on spirulina (*Arthrospira platensis*) and quinoa (*Chenopodium quinoa*)

331.88 g ± 31.39 g | n = 7 (individual) | 29.0 ± 1.0 °C | 35 days

	Diet A	Diet B	Diet C
Main ingredients:	Casein (34%) and dextrin (30%)	Spirulina (58%)	Spirulina (46%) and quinoa (20%)



Eatable gelatine capsules with the same orosensory characteristics, which masks the organoleptic properties of feeds



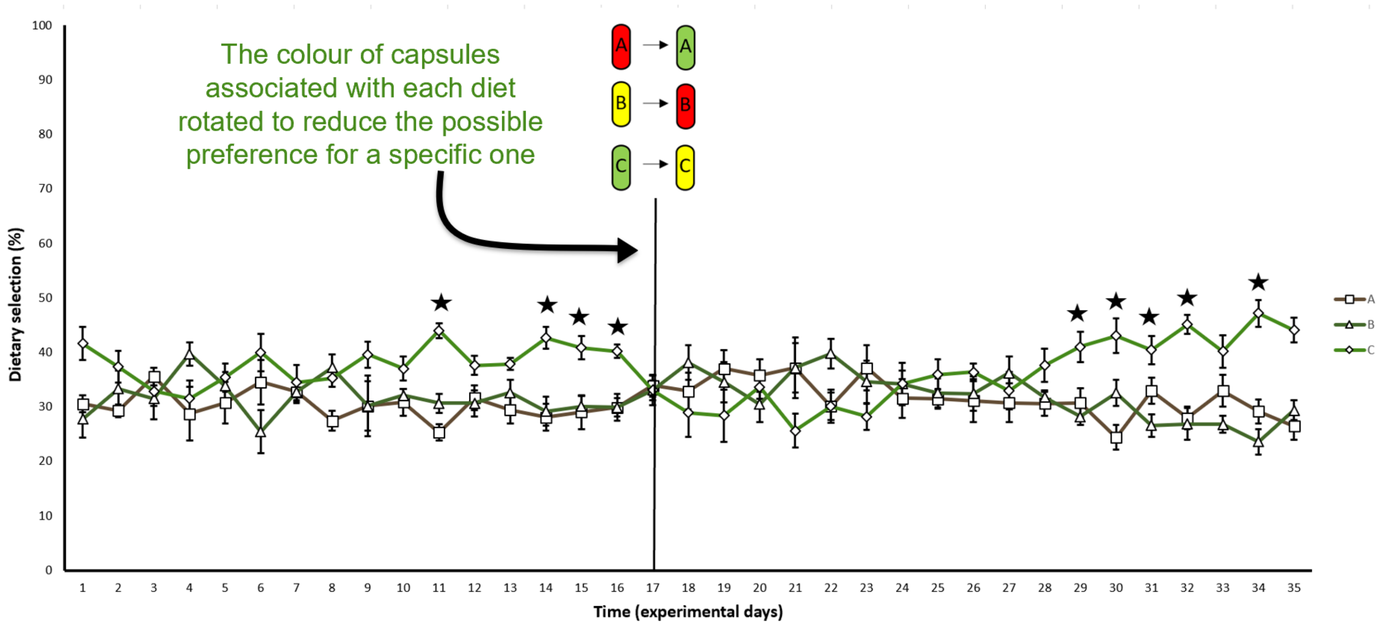


Figure 1 – Evolution of average daily intake of three diets (Diet A, B and C) by Nile tilapia expressed in percentage of the total number of capsules ingested for 35 days. The content of the capsules changed on day 17. Values represent the mean ± S.E.M. of 7 individual fish. Stars represent significantly different values (ANOVA, $p < 0.05$).

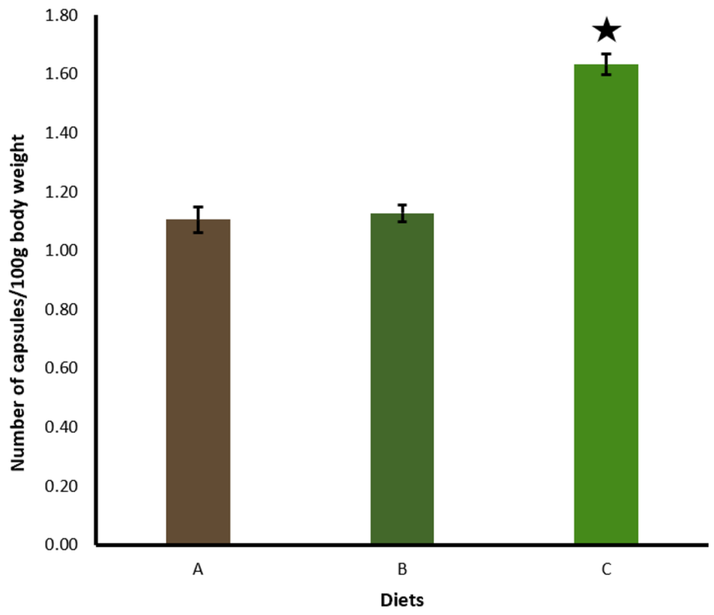


Figure 2 – Average daily intake of three diets (Diet A, B and C) by Nile tilapia, represented by the number of capsules ingested per 100g of body weight during days with statistically significant differences between diets. Values represent the mean ± S.E.M. of 7 individual fish. The star represents significantly different values (ANOVA, $p < 0.05$).

From day 11 until 16, capsules containing Diet C were preferred ($p < 0.05$)

After colour rotation, Diet C was also selected ($p < 0.05$), from day 29 until the end of the experiment

Diet C ($p < 0.05$) was ingested around 46.8% and 44.2% more than diet A and B, respectively

Diet C (with) leads to a better feed intake than Diet B (with), while the purified Diet A (with) resulted in the lowest intake

was able to select one of the given diets, based only on post-ingestion and absorption signals

Diet encapsulation trials allow fish to express its behaviour, thus these methods may be considered in the initial screening of potential new aquaculture feeds

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This work has received funding from the European Union's Horizon 2020 research and innovation programme under the Marie Skłodowska-Curie grant agreement No 956129 "EasyTRAIN".