

Repurposing sardine cooking wastewaters as ingredients for European seabass diets

Daniela Resende^{1,2,3,4,5,*}, Cristina Velasco¹, Maria J. Pereira⁶, Tiago Sá¹, Célia Rocha^{3,5}, Luís M. Cunha³, Rui C. Lima⁵, Carla Brazinha⁶, Manuela Pintado⁴, Luísa M.P. Valente^{1,2}

¹CIIMAR, Centro Interdisciplinar de Investigação Marinha e Ambiental, Universidade do Porto, Matosinhos, Portugal; ²ICBAS, Instituto de Ciências Biomédicas Abel Salazar, Universidade do Porto, Portugal; ³GreenUPorto/INOV4Agro & DGAOT, Faculdade de Ciências da Universidade do Porto, Portugal; ⁴CBQF – Centro de Biotecnologia e Química Fina, Laboratório Associado, Escola Superior de Biotecnologia, Universidade Católica Portuguesa, Porto, Portugal; ⁵Sense Test Lda., Vila Nova de Gaia, Portugal; ⁶LAQV/REQUIMTE, Department of Chemistry, NOVA School of Science and Technology, Lisboa, Portugal
* danielaresende@outlook.com

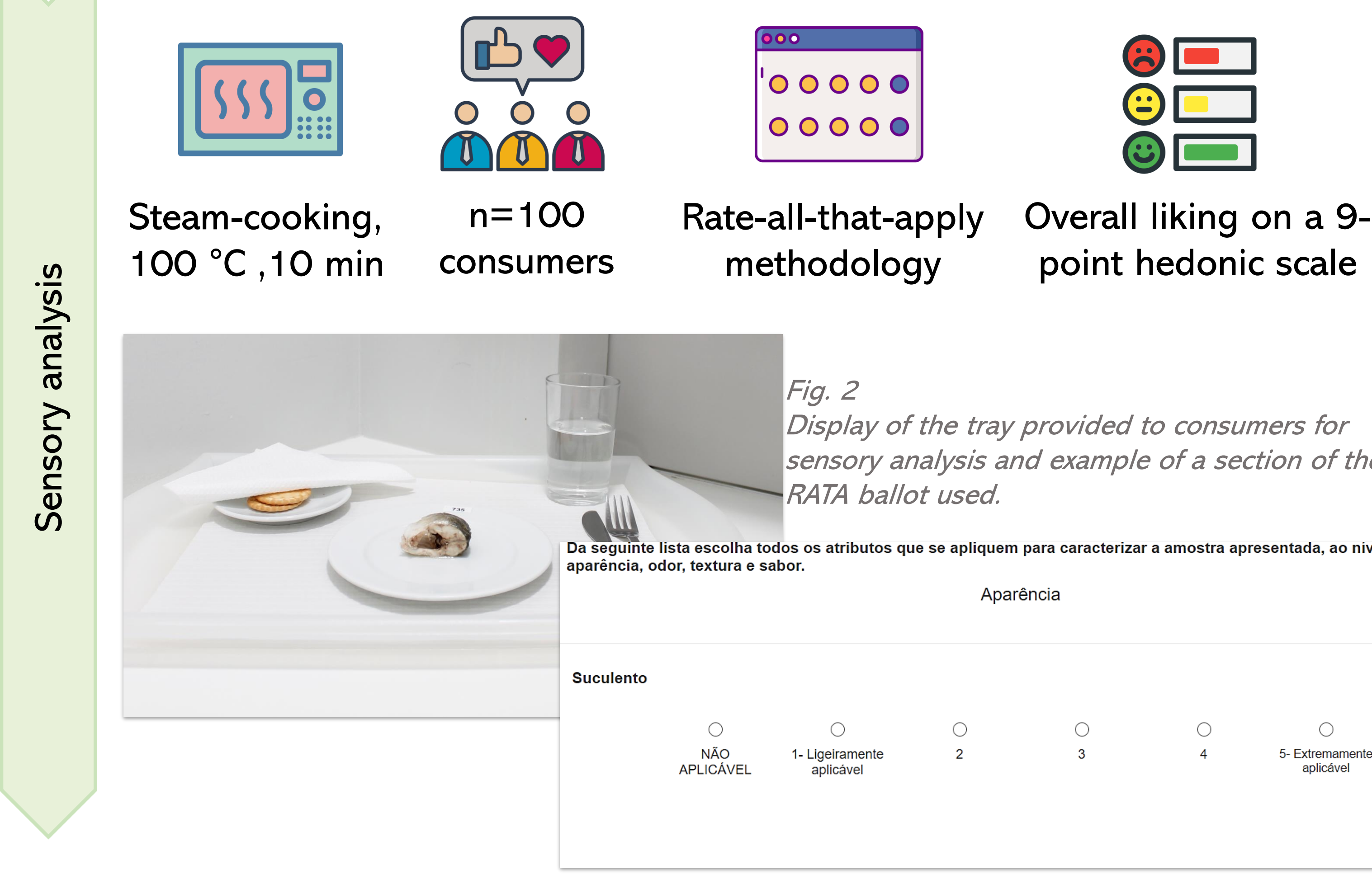
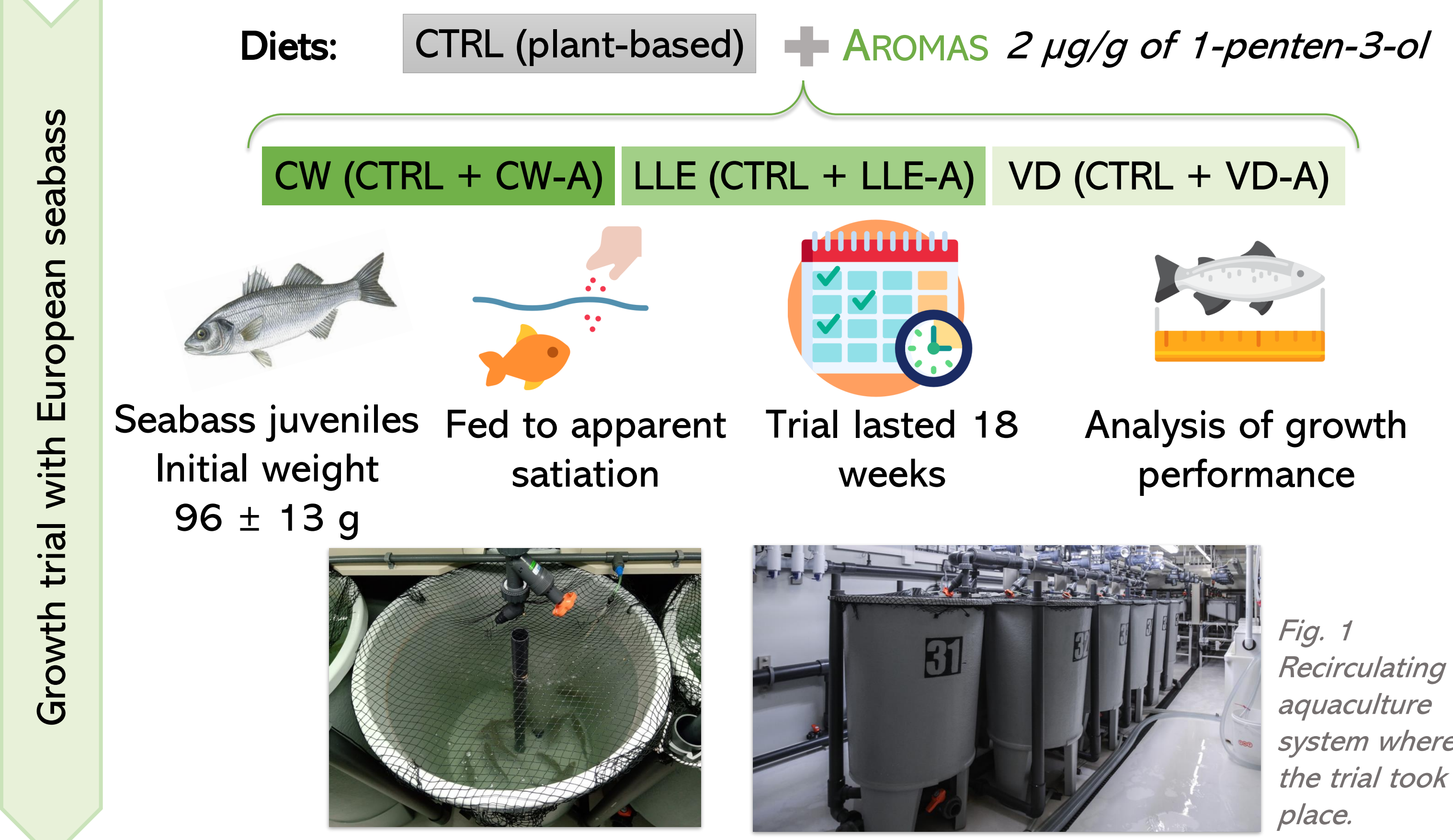
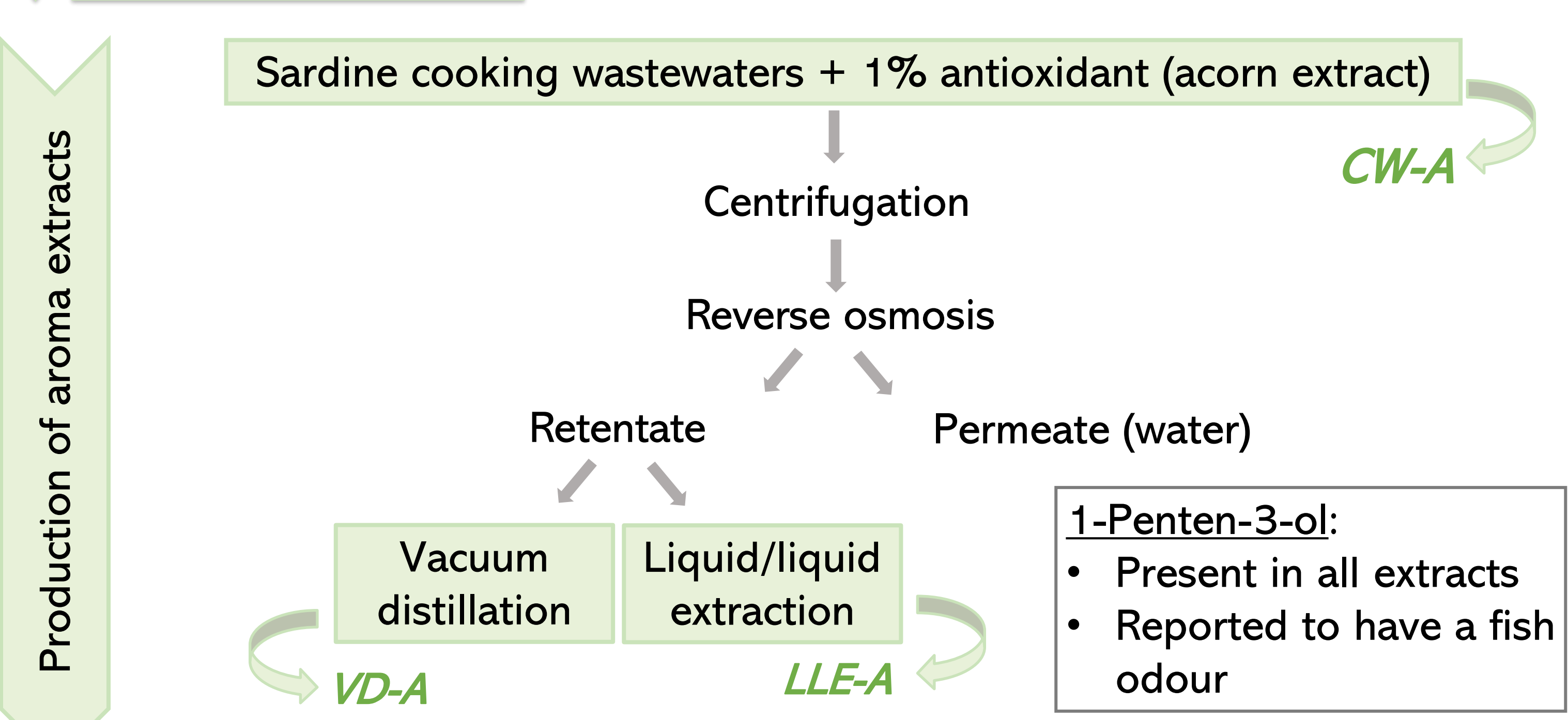
INTRODUCTION

The fast growth of aquaculture led to a need to replace marine ingredients (fish meal and fish oil) in aquafeeds with more sustainable vegetable ones. However, this often reduces feed intake, particularly in carnivorous fish, such as the European seabass (*Dicentrarchus labrax*), with subsequent effects on fish growth and flesh quality. Supplementing plant-based aquafeeds with attractants obtained through circular economy processes may result in sustainable aquafeeds without reduced intake.

GOALS

- To evaluate aroma extracts from sardine cooking wastewaters, a canning industry by-product, as feed intake stimulants, in diets with a high content of vegetable-based ingredients, for European seabass;
- To assess possible impacts on organoleptic characteristics of cooked slices of European seabass

METHODS



RESULTS

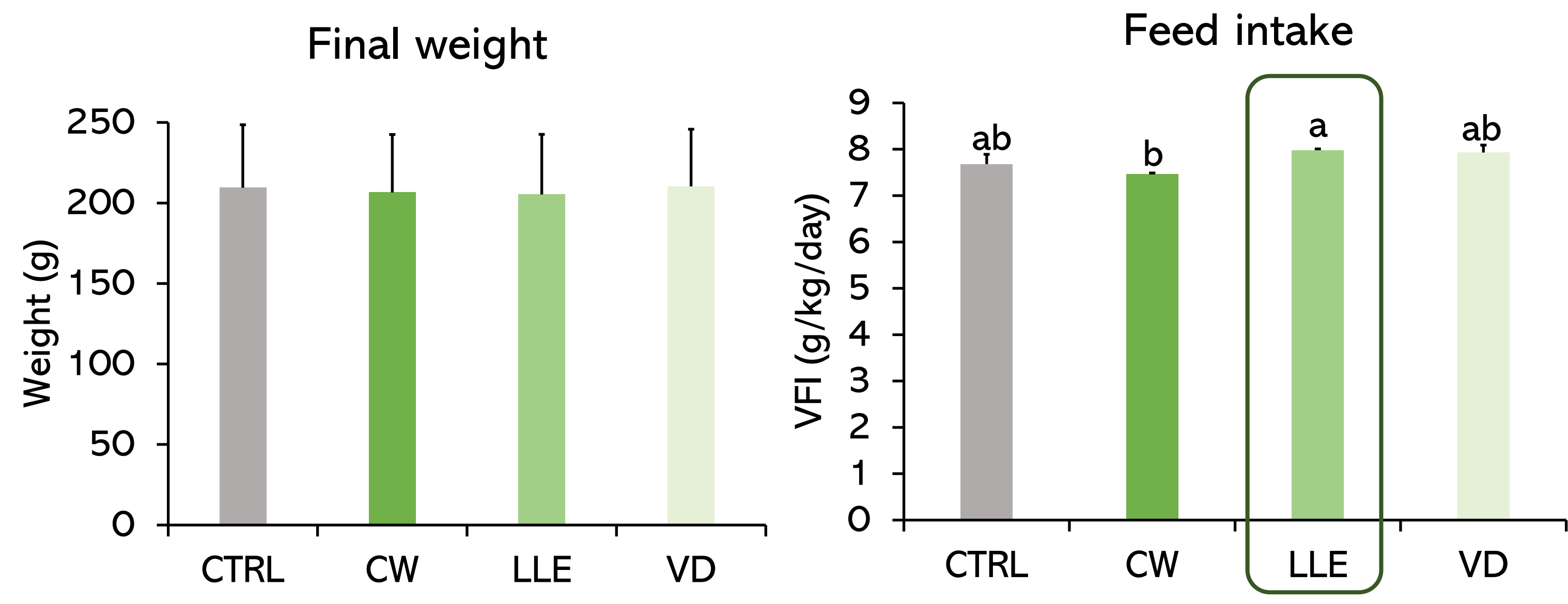


Fig. 3 Final weight and voluntary feed intake (VFI) of fish fed the experimental diets. Different letters above the bars indicate significant differences (ANOVA, Tukey test, p<0.05).

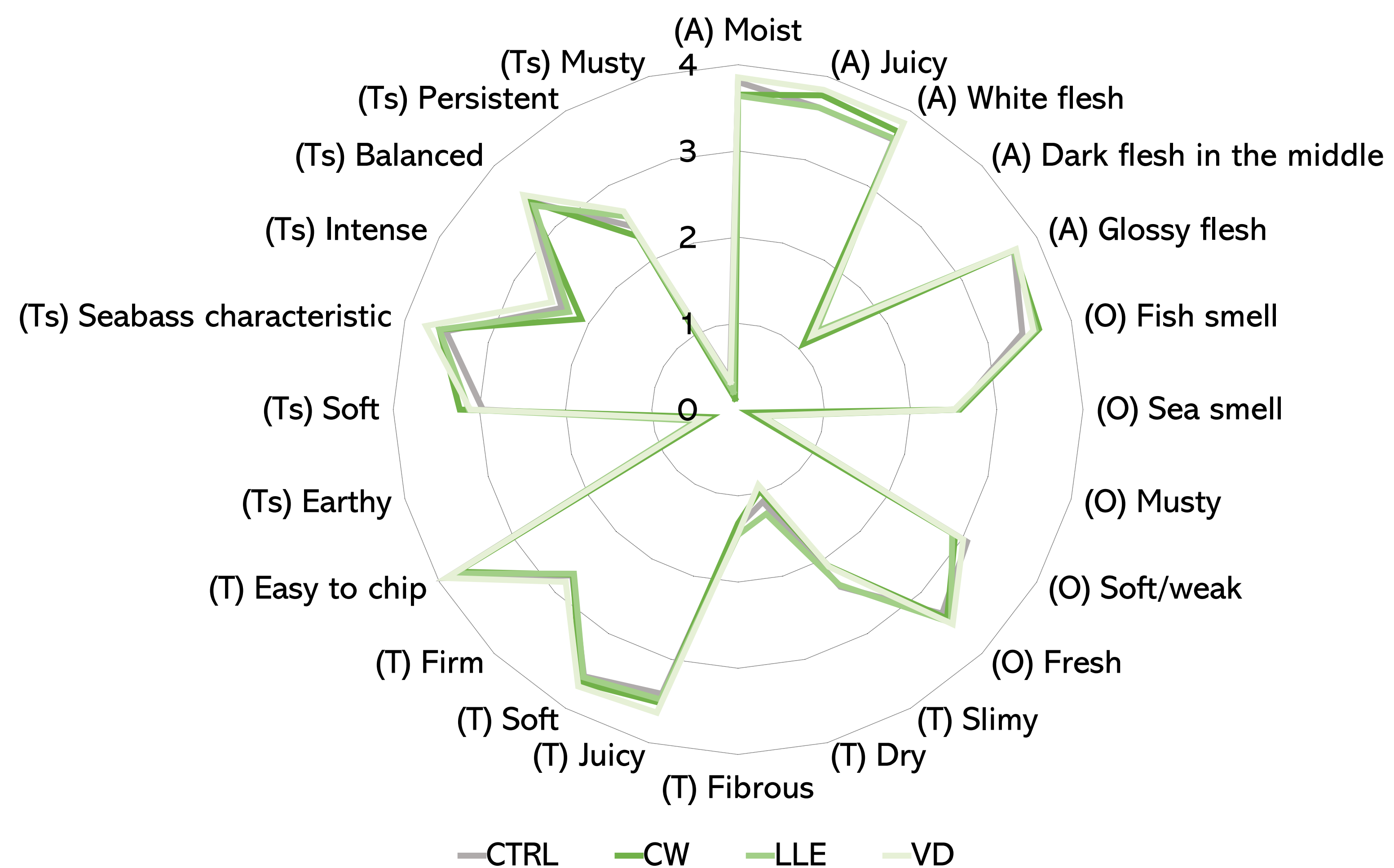


Fig. 4 Sensory profiling (A – appearance, O – odour, T – texture, Ts – taste) of samples of fish fed the different diets. No significant differences found.

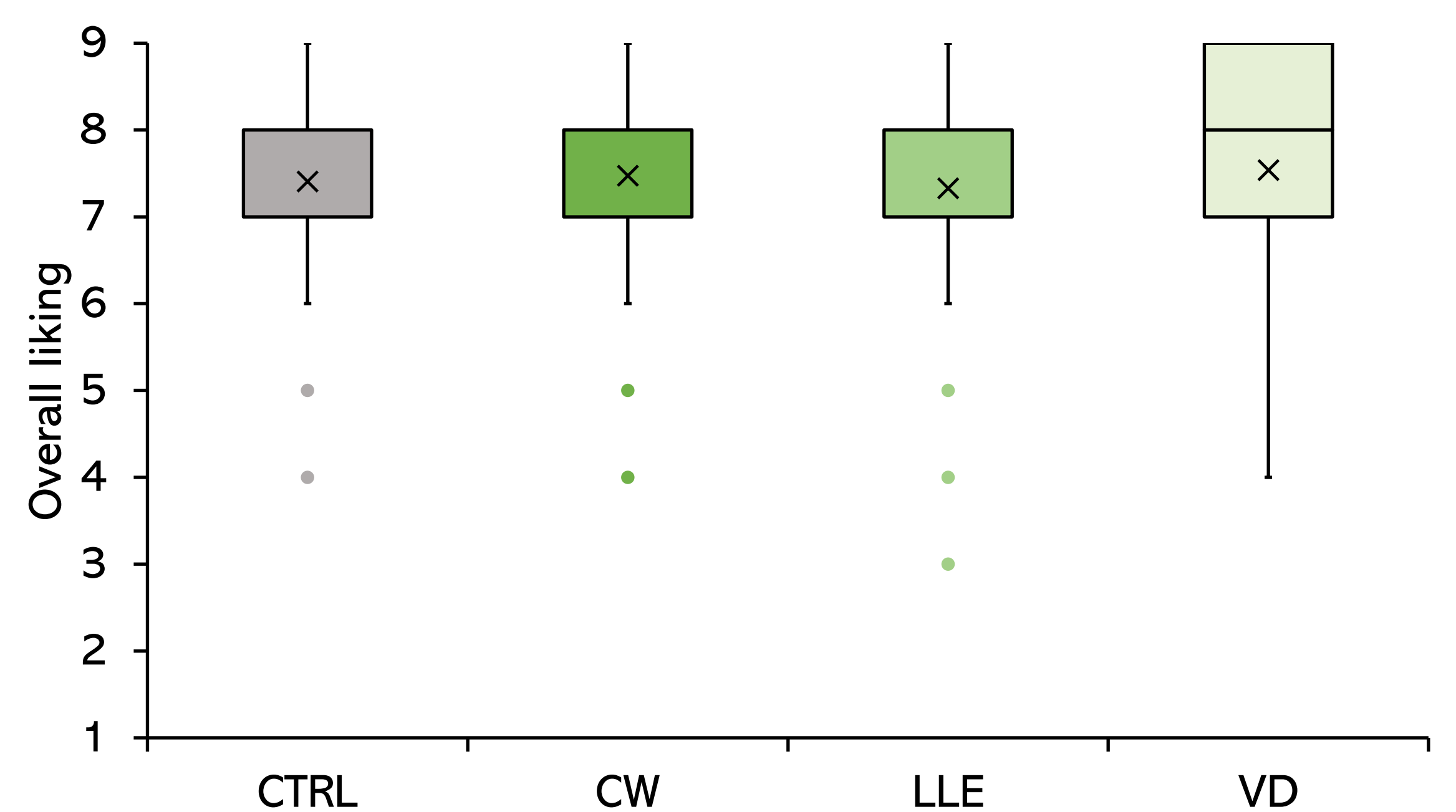


Fig. 5 Overall consumer liking of samples of fish fed the different diets; x indicates the average value. No significant differences found.

CONCLUSIONS

- Sardine cooking wastewaters can be processed into extracts rich in aromas
- The LLE-A aroma led to the highest fish feed intake
- Final weight and organoleptic characteristics (odour, taste, texture, etc.) were not affected
- All samples had high sensorial quality and were well accepted by the consumer panel

IN THE FUTURE...

- Optimizing extraction processes
- Testing different inclusion levels in diets