

“Fish feed formulating and testing”



From left to right: Ana Veríssimo; Prof. Dr. Diana Pinto, Prof. Dr. Mário Pacheco, Dr. Sofia Guilherme, Raquel Marçal in front of the white dots on the pond - Flamingos in the vicinity of the campus; expert in sieving the top few centimeters of shallow waters.*

“Mario you and your team from the University of Aveiro (UAVR) are involved in AQUACOMBINE project. Can you please tell us what are your main tasks in the project?”

“The UAVR team is tackling two main tasks in the framework of WP7: (task 7.3) to assess DNA integrity and anti-oxidant defences in different tissues/organs of fish and shrimp fed with *Salicornia* (whole or part of the plant, extracts) supplemented diets, and (task 7.5) to determine the biochemical profile of fish and shrimp flesh. Task 7.3 intends to investigate if *Salicornia* supplementation induce adverse impacts on the animal’s health and, desirably, whether defence systems can be strengthened, while the task 7.5 aims to predict/exclude any food safety issues or taste alterations.

These tasks come upstream from the zotechnical trials (appraising growth performance and feed utilization) and are developed concomitantly to the assessment of immune condition and inflammatory response of fish and shrimp under the same conditions, whose results are interpreted in an integrated way.”





“What added value do you expect from the four-year AQUACOMBINE project?”

“The environmental sustainability of most aquaculture segments, namely fish and crustacean rearing, is a matter of global concern, namely in relation to the identification of alternative aquafeed components to partially replace products from wild-caught fish. Thus, taking DNA integrity and anti-oxidant system as early warning signals of health impairments, the most expected added value of the project, in the framework of our tasks, is the demonstration that *Salicornia* can be incorporated in fish and shrimp feeds as a safe, cost-efficient and environmentally sustainable substitute of animal protein sources, without compromising productivity as well as organism’s health and welfare.

In addition, the recognition that *Salicornia* can provide functional ingredients capable of strengthening the organisms condition through genomic protection and, in particular, their ability to cope with unfavourable events in aquaculture (*e.g.* diseases, hypoxia and salinity stress), mitigating productivity losses, may constitute a relevant finding.”

“Mario, which result has surprised you the most so far?”

“Although corresponding to a response profile already described by a few authors, it was surprising that, in some circumstances, the genomic protection conferred by aquafeeds supplemented with *Salicornia* (whole or part of the plant, extracts) presupposes a previous step in which the metabolic defences have to be challenged, creating mild and transient genetic damage. The creation of small risk signals seems to be crucial to activate/wake up the protection systems in fish and shrimp.”

“What significance does AQUACOMBINE have for you and your university?”

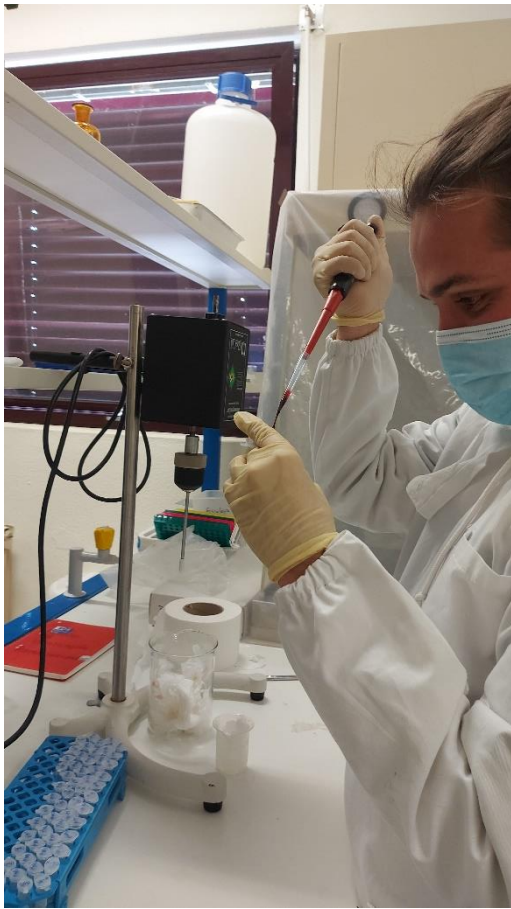
“In this context, my goals are aligned with those of the university (both the University of Aveiro and the university as a universal concept) and with those of the world (it is not me who say it; is embodied in UN Sustainable Development Goals - SDG). Those goals involve, on the one hand, the generation of basic knowledge seeking to advance the frontiers of biological processes and organisms functioning, and, on the other hand, the production of applied knowledge, to provide practical solutions to specific problems. The world’s specific problems here are: hunger, food security and sustainable food production (SDG 2); availability and sustainable management of water resources (SDG 6); ensure sustainable consumption and production patterns (SDG 12); sustainable use of marine resources for sustainable development (SDG 14).”

“If you could wish for something for the project, what would it be?”

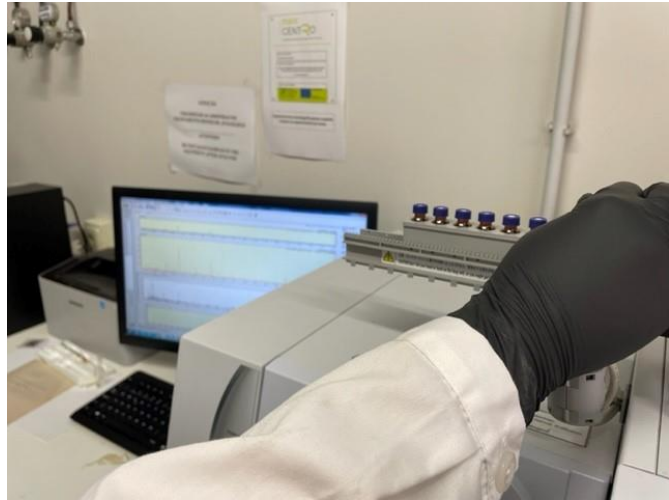
“In the end, I would like that society will recognize the members of the AQUACOMBINE consortium as scientists making a difference.”



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Collaborator (Pedro Sousa; MSc student) carrying out a laboratory procedure to evaluate haematological parameters of the European bass (*Dicentrarchus labrax*).



Detail of laboratory procedure to evaluate biochemical profile of shrimp (*Litopenaeus vannamei*) flesh.

* University of Aveiro (UAVR) team enrolled on WP7. From left to right: Ana Veríssimo (project fellow involved in task 7.5; LAQV-Requimte and Department of Chemistry); Prof. Dr. Diana Pinto (coordinator of task 7.5; LAQV-Requimte and Department of Chemistry, Assistant Professor and expert in natural products chemistry); Prof. Dr. Mário Pacheco (project coordinator at UAVR; CESAM and Department of Biology, Associate Professor and expert in physio toxicology and aquaculture); Dr. Sofia Guilherme (Assistant Researcher at CESAM and Department of Biology; expert in genotoxicity and anti-genotoxicity processes); Raquel Marçal (project fellow involved in task 7.3; CESAM and Department of Biology). Behind, in the background, the white dots on the pond - Flamingos (*Phoenicopterus roseus*), in the vicinity of the campus (believe me); expert in sieving the top few centimeters of shallow waters.

