

Impact of dietary inclusion of wine and olive oil waste extracts on physiological and health status of seabass (*Dicentrarchus labrax*)

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Abstract

Aquaculture is the only way to satisfy the growing global demand for seafood without depleting natural fisheries resources. Disease outbreaks are major threats to aquaculture production. The use of antibiotics or chemotherapeutics has been a common practice to combat infectious diseases that threaten production and induce high economic losses. This practice promotes high environmental harmful impacts and risks to human health (e.g., antibiotic-resistant bacteria). Thus, the development of nutritional strategies, such as natural functional supplements (FS) that preserve fish's health and well-being while preventing potential zoonotic disease and antibiotics use, is highly recommended to achieve the economical and sustainability of aquaculture.

Wine and olive oil industry by-products (such as grape marc (GM) and olive pomace (OP)) are a source of high-value bioactive molecules, such as antioxidant and phenolic compounds. Thus, the valorisation of these agro-industrial by-products into new FS for aquafeeds is of high practical interest, contributing to the circular economy. The present study aims to evaluate the prospective beneficial effects of a previous optimised antioxidant-rich extract of a GM and OP mixture (WO) on seabass physiological and health status. For this purpose, two similar plant-based diets were formulated, including 0 (control diet) and 0.4% of WO extract (WO diet), corresponding to 0 and 91.1 of total antioxidants ($\mu\text{m TE/g}$ diet), respectively. After feeding seabass with these diets for ten weeks, the fish haematological, biochemical and immunological were assessed. The results demonstrated that 0.4% optimised WO extract decreases the mean corpuscular volume (control 159 ± 53 ; WO 119 ± 9 , $p=0.042$) in seabass. Other immunological parameters are being performed further to understand this extract's impact on seabass health status.

Acknowledgements

Funded by Project SPO3 (ref.POCI-01-0145-FEDER-030377;FCT); project InovFeed(ref. MAR-02.01.01-FEAMP-01111;Mar2020).