

- 17012 | ASSESSING ANTIMICROBIAL POTENTIAL OF AGROINDUSTRIAL BYPRODUCTS' EXTRACTS PRODUCED THROUGH SOLID STATE FERMENTATION IN MARINE FISH

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Sustainability is definitely the 21st century word. The future global food provision is dependent on fish and on sustainable expansion of aquaculture production. For that, alternative nutritional strategies for aquaculture disease management are required, reducing the use of synthetic drugs. Agroindustrial byproducts (brewery, winery and olive oil industry) constitute a circular and ecofriendly potential source of add-value bioactive compounds. Solid state fermentation (SSF) is a biotechnological low cost process that may be applied to these byproducts to effectively increase bioavailability of their bioactive compounds and so their antimicrobial potential against fish pathogens. The aim of this study was to evaluate antibacterial properties of agroindustry (beer, wine and oil processing industries) byproducts' extracts produced through SSF with *Aspergillus ibericus*. For that purpose, brewers spent grains (BSG), crude and exhausted olive pomace (COP and EOP), exhausted grape marc (EGM), exhausted vine trimming (VTS) and a simplex-centroid optimized mixture of three agro-industrial byproducts (30% EGM, 36% VTS and 34% EOP), were fermented by *A. ibericus* MUM 03.49. Fermented and unfermented matrixes were extracted with water. To address antimicrobial potential of the extracts a broad spectrum bioanalysis constituted by spot analysis, well-diffusion assays, and fluorescence microscopy was performed against high incidence fish pathogens in aquaculture.

Results in Table 1 confirmed that unfermented optimized mixture extract is effective against *Aeromonas salmonicida* and *Vibrio vulnificus*, while fermented optimized mixture inhibits *Streptococcus iniae*.

Further analysis are being conducted to test potential of these extracts against other important pathogenic bacteria from *Aeromonas*, *Edwardsiella*, *Photobacterium*, *Shigella*, *Vibrio*, *Staphylococcus* and *Streptococcus* genera.

Funded by: SPO3 (ref. POCI-01-0145-FEDER-030377; FCT) & InovFeed (ref. MAR-02.01.01-FEAMP-0111; Mar2020)

Table 1- Antimicrobial activity of 200mg/ml unfermented and fermented optimized mixture (solubilized both in H₂O or 10% DMSO) against *Aeromonas salmonicida*, *Vibrio vulnificus*, *Streptococcus iniae*. Tests were done using 100 µL of extract solution in a well-diffusion bioassay, with results considered positive if a growth-inhibition halo was observed within 24 hours at optimal conditions for each bacterial growth.

	Unfermented Optimized Mixture	Fermented Optimized Mixture
<i>Aeromonas salmonicida</i>	+	-
<i>Vibrio vulnificus</i>	+	-
<i>Streptococcus iniae</i>	-	+