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Looking for cockle *Cerastoderma edule* protein markers of resistance against marteiliosis

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The infection with the protistan *Marteilia cochillia* causes huge cockle *Cerastoderma edule* mortality in the southern rias of Galicia (NW Spain) since 2012. Stating ways to minimise losses due to marteiliosis became peremptory; the production of marteiliosis-resistant cockle strains through selective breeding was considered a promising strategy. In this context, the search for cockle molecular markers of marteiliosis resistance was addressed through proteomic and genomic/genetic approaches. The proteomic approach is reported in this poster. The experimental design involved comparing the proteome of cockles before being exposed in the field to a marteiliosis outbreak with the proteome of survivors after the outbreak, assuming that some of the proteins differentially expressed in the survivors could be crucial to survive under marteiliosis pressure. The shellfish bed of Lombos do Ulla (ria of Arousa) was chosen for the field work; previous studies had shown that marteiliosis outbreaks started there every summer affecting the newly recruited cockles and resulting in death of almost the whole recruited cohort by the next autumn or winter. Forty five newly recruited cockles were collected from that bed in July 2018 and their soft tissues were processed for proteomic analysis. Additionally, the marteiliosis dynamics in the recruited cohort was monitored by estimating monthly the prevalence and intensity of marteiliosis and the mortality rate. In July 2019, 45 surviving cockles of that cohort were collected from the bed, a half of their meat was processed for proteomic analysis while the other half was analysed to confirm the absence of marteiliosis. Proteomic profiles of the cockles collected before and after the outbreak were compared using a shotgun approach through liquid chromatography coupled to mass spectrometry. Qualitative comparison allowed the identification of 93 proteins that were found exclusively before the outbreak, 101 proteins exclusively found in survivors and 271 proteins in both situations. Quantitative comparison allowed the identification of 45 proteins that were significantly down-regulated and eight significantly up-regulated in the surviving cockles. The eight significantly up-regulated proteins in the survivors have been selected as candidate markers of resistance to marteiliosis; they need to be validated as true markers of marteiliosis resistance.