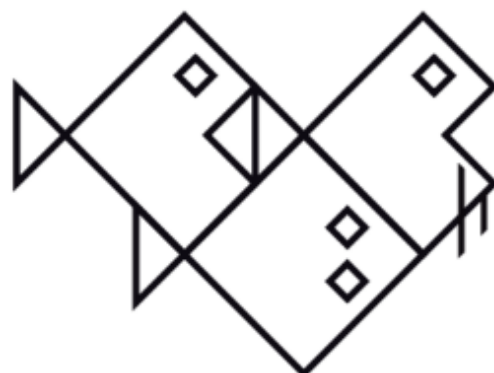
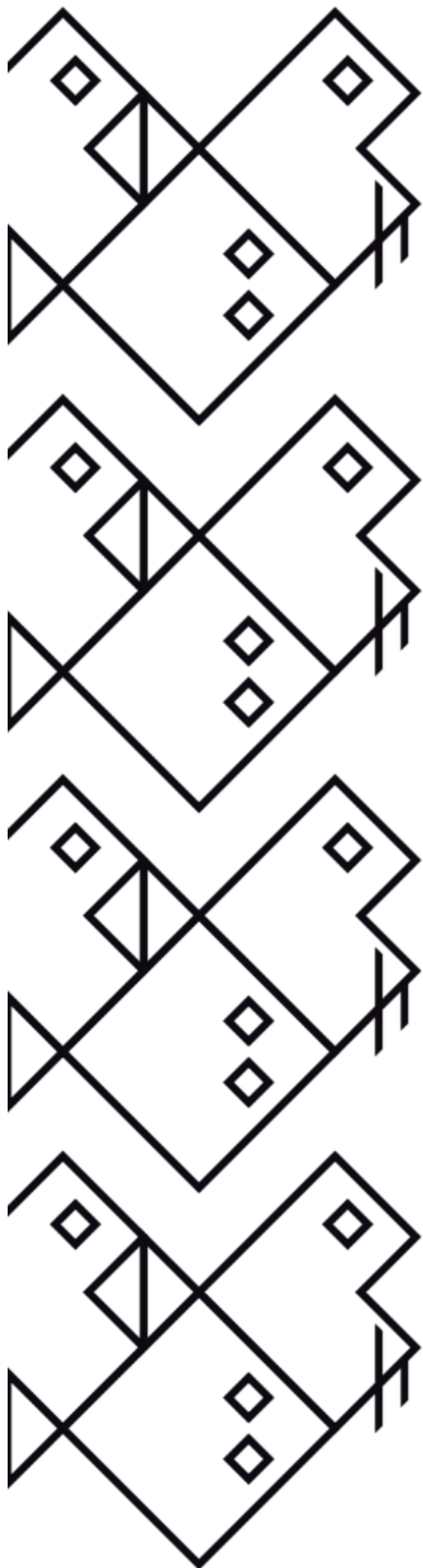




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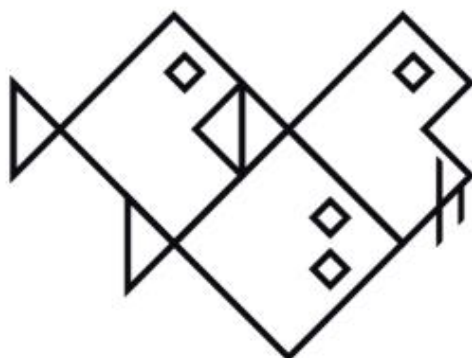




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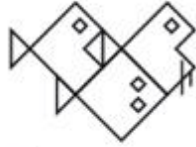
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IN VITRO MODULATION OF CYTOKINES BY PATHOGENS AND PROBIOTICS ON THE SKIN OF GILTHEAD SEABREAM (*Sparus aurata*)

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Gilthead seabream (*Sparus aurata*) is the only species of the Sparidae family currently bred on a large scale. As one of the most important species on Mediterranean aquaculture. For this main reason, the knowledge of its immune system and their alterations it is crucial to avoid economic losses worldwide. Fish are in intimate contact with their environment and defending itself by a complex system of innate defence mechanisms, that is divided into physical barriers, cellular and humoral components. The skin as a physical barrier seems to be central to protection from pathogens such as *Photobacterium damsela* ssp. *piscicida*. Probiotics are microorganisms (usually bacteria) that promote different benefits on host. The aim of this work was to evaluate the *in vitro* capacity of *Shewanella putrefaciens* also known as Pdp11 (a probiotic isolated from skin of gilthead seabream) to improve the skin immune defence against *Photobacterium damsela*. Thus, we analyzed by qPCR the expression profile of different cytokines in seabream skin explants, in response to an exposure (of 2 and 4 hours) to the probiotic Pdp11 and the pathogen *Photobacterium damsela*. Our results showed that the different cytokines are modulated by both the pathogen (*P. Damsela*) and the probiotic (Pdp11), which could, at least in *in vitro* level, improve the gilthead seabream mucosal health. Further studies are necessary to unravel if the present findings *in vitro* can be confirmed through *in vivo* studies.

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