Does poly-ß-hydroxybutyrate stimulate the immune system of European sea bass larvae?

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BACKGROUND

➢ Mass mortality of fish larvae is a major bottleneck in aquaculture production
➢ Promising solution:
   Application of dietary supplements such as prebiotics to improve the immunocompetence of larval fish

EXPERIMENTAL APPROACH

❖ Species in focus
   European sea bass (Dicentrarchus labrax) larvae were used from 28 days post hatch onwards

❖ Prebiotic in focus
   Poly-ß-hydroxybutyrate (PHB) is a bacterial energy storage compound which was shown to have an immunostimulatory potential
   (De Schryver et al., 2011, Environmental Microbiology 13(4), 1042-1051)
   Freeze-dried PHB-containing bacteria (Alcaligenes eutrophus) with a high PHB content (75%) were used

❖ Experimental timeline & design
   Sea bass larvae were reared in a flow-through system and fed with brine shrimp nauplii (Instar II) 3 times a day over a period of 10 days
   Experimental groups (in triplicate):
   1. PHB group: PHB-containing bacteria were encapsulated in brine shrimp
   2. Control group: no PHB

GENE EXPRESSION:

RESULTS & CONCLUSION

PHB enhances the immune response in sea bass larvae on the gene expression level

Graphs display mean + SEM

F = 9.80, p < 0.05

F = 10.85, p < 0.05

F = 14.35, p < 0.05

F = 8.27, p < 0.05