

BENEFICIAL EFFECTS OF PROBIONTS AND THEIR MODES OF ACTION

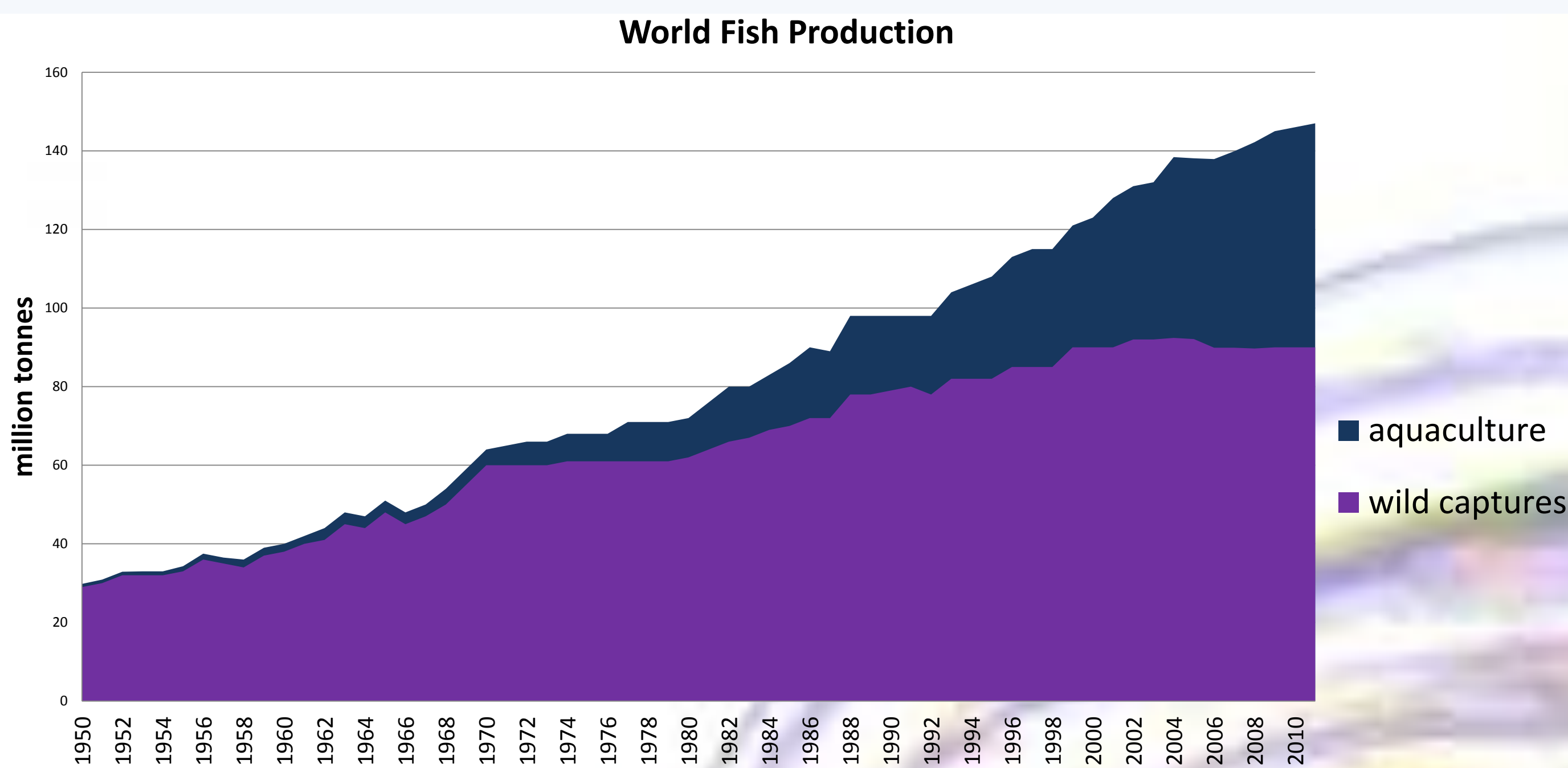
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◆ Introduction

Aquaculture evolved from a marginal industry to an industry meeting 50% of the global needs of aquatic products. However, the larval phase of the aquaculture production cycle is highly susceptible to infectious diseases.

Up till recently the control of diseases relied on the use of antibiotics, leading to the development of drug resistant bacteria. Probiotics are a promising alternative to the use of antibiotics in disease control



World fish production by aquaculture and wild captures (based on data from FAO)

◆ State of the art

A numerous amount of studies have reported improved survival and growth of fish larvae when supplied with probiotics, however there is a lack of knowledge on the modes of action of the probiotics and their interaction with the aquatic host.

◆ Goal

The main goal is to study the **impact of probiotics on larval development** of European sea bass (*Dicentrarchus labrax*) and disease resistance. First of all effective probiotics will be selected and optimized. Secondly, we will elucidate the working mechanism of the selected probionts.



Sea bass larva 14 DAH (© Anamaria Rekecki)

◆ Methods & Materials

The potential probionts will be **acquired** from healthy larval and adult sea bass.

The isolates will be **screened** for their potential as probiotic by:
 → testing the ability to inhibit the growth of sea bass pathogens;
 → testing the ability to adhere to the epithelial cells and the mucus of the larvae;
 → testing the lack of invasiveness or toxicity towards aquatic hosts and humans.

Following, the inoculum of the selected probionts will be **optimized**.

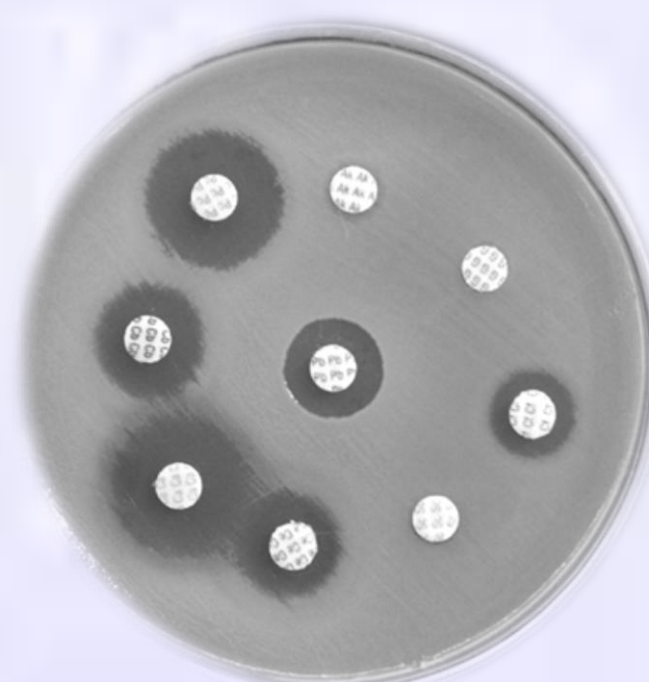
Subsequently, the optimized probionts will be subjected to a more in depth research on the **modes of action** of the probiont, with a focus on disease resistance.

◆ Results

→ 300 strains were isolated



→ 11 isolates of the 300 showed inhibitory activity against the 6 pathogens tested.



→ Preliminary research indicated that several isolates with inhibitory activity also showed strong mucus adhesion.

◆ Conclusion

The generated data will assist in developing strategies for better sea bass larval management through the manipulation of the intestinal microbial flora.