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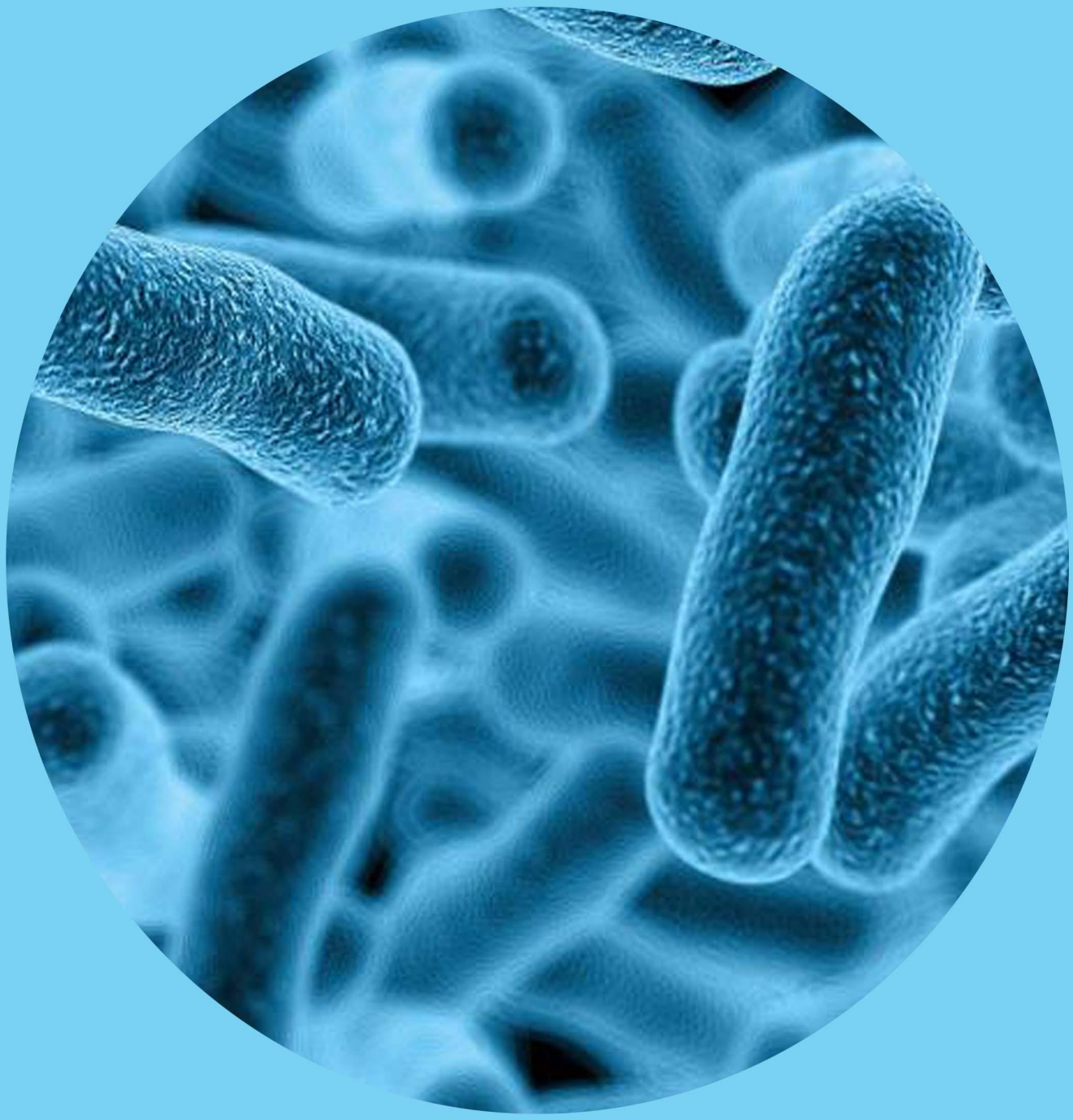
How to choose probiotics



With the continuous advancement of "antibiotic-free" process, the choice of substitute additives has become an industry topic. Microecological preparations have gradually replaced traditional additives with the advantages of no residue, no side effects, no environmental pollution, no drug resistance, low cost and convenient use, and become the "seed player" in the army of replacing antibiotics.

How to choose probiotics

The microecological preparation used in aquaculture refers to an important intestinal flora regulator added to feed, also known as probiotics. The American FDA defines probiotics as microorganisms that can be directly fed.

Good probiotics have strong metabolic capacity, strong proliferative capacity, safety and can pass through the stomach. So, how to get probiotics with high performance?

The function of probiotics depends on the **strain**, not the species. Vegamax has found that even the same species and different strains have great differences in proliferation and metabolism. Therefore, **excellent microbial strains are the key to determine the industrialization value of fermented products and the success of fermentation.**

Screening of strains is generally divided into **5** major steps.

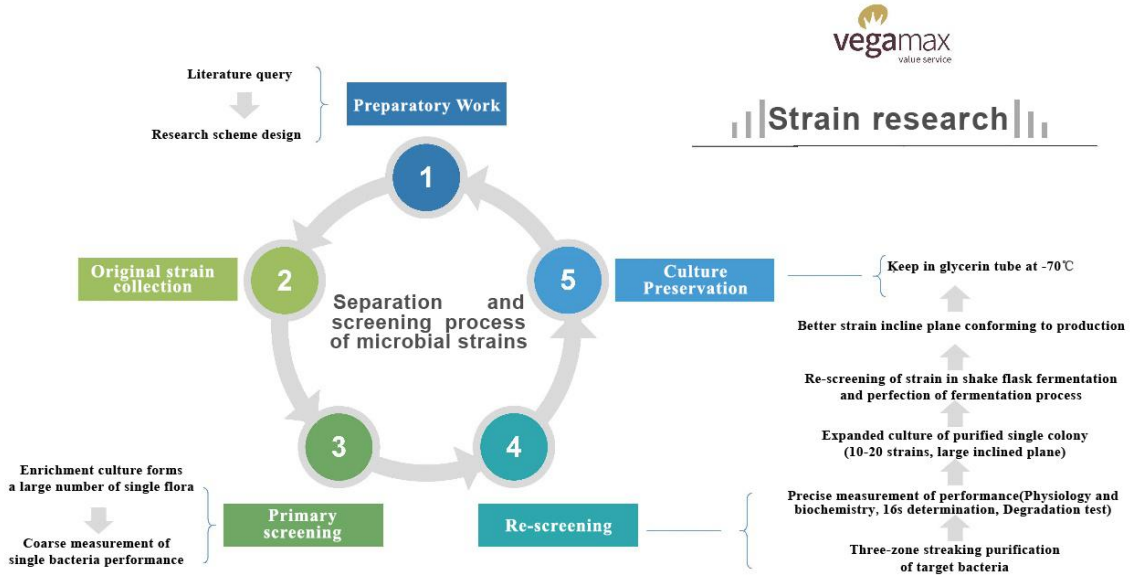


Fig. 1 Strain screening process

Step 1 is to know the target bacteria. First of all, consult a large number of related data to understand the strain attributes, and then make a detailed scheme design, including screening steps and optimization of culture medium, which is equivalent to simulation optimization of production process.

Step 2, after the scheme is designed, the strains are collected.

Step 3 is to screen the collected strains. About thousands (at least hundreds) of enriched single colonies were formed by primary screening. Through microscope observation, typical colonies were picked out. The strains were identified, the physical and chemical properties were analyzed, and the gene sequence was determined. After the primary screening of single colony, it was expanded on a large incline plane, and 80-90 strains were screened out for later use.

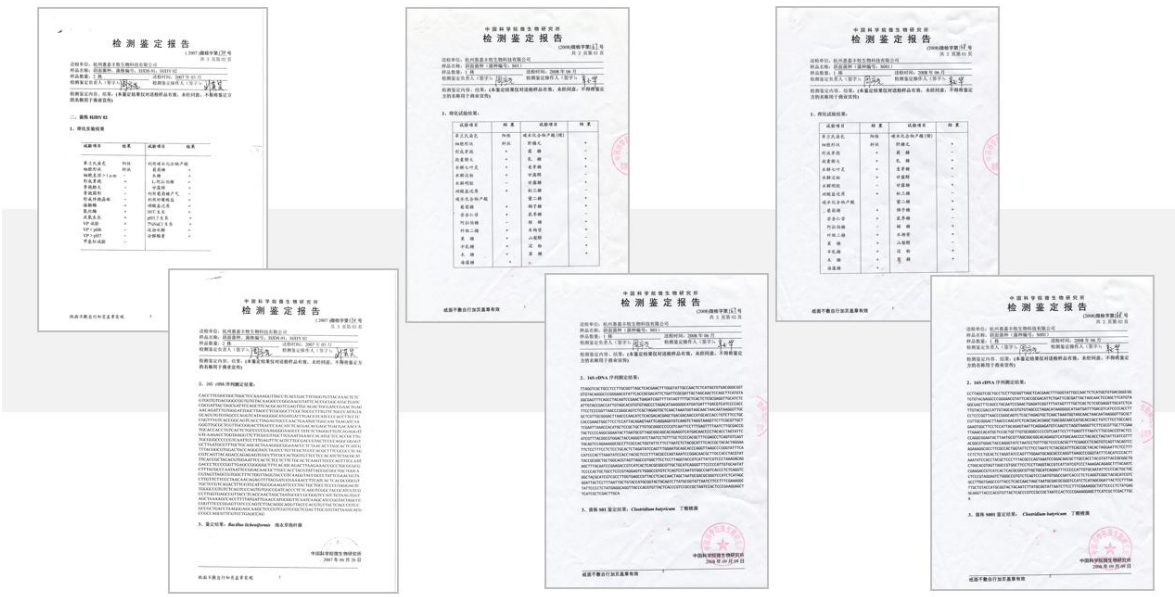


Fig. 2 Bacterial identification report

Step 4, re-screening. Firstly, the target bacteria were purified by streaking in three zones, and the performance was measured accurately. Then, a series of experiments were carried out, including the optimization of culture medium, the bacteriostasis of metabolites of fermentation broth, the evaluation of stress resistance of products and the adaptability test of animal intestines, etc. 2-3 strains with outstanding performance in all aspects were selected.

Step 5, preserving strains. Preserved in 40% glycerol at -70℃. The selected colonies were inoculated on the slope, then eluted with 40% glycerol and stored at -70℃. Glycerin, as a humectant,

can prevent water in bacteria from forming ice crystals at -70℃, avoid cell damage, and keep bacteria in it alive for 3-5 years.

Fig. 3 Strains preservation

This is the "treasure house of Vegamax"-the strain preservation room. The selected excellent strains are stored here. Vegamax has 829 reserved strains and 236 preserved strains. All commercial strains have been preserved in China Microbial Culture Collection Center and passed the safety appraisal. Besides, Vegamax is unique allowed producer and seller of clostridium butyricum in China and is the National standard maker in China. Vegamax is the owner for 2 new product certificates(Clostridium butyricum and Bacillus licheniformis) while total 3 issued in China.

Fig. 4 New product certificate of Clostridium butyricum(Right) and Bacillus licheniformis(Left)

Just because the pace of screening strains has never stopped, Vegamax can continuously introduce new probiotic products to meet market needs. At present, the company has launched strains with very good feedback, such as:

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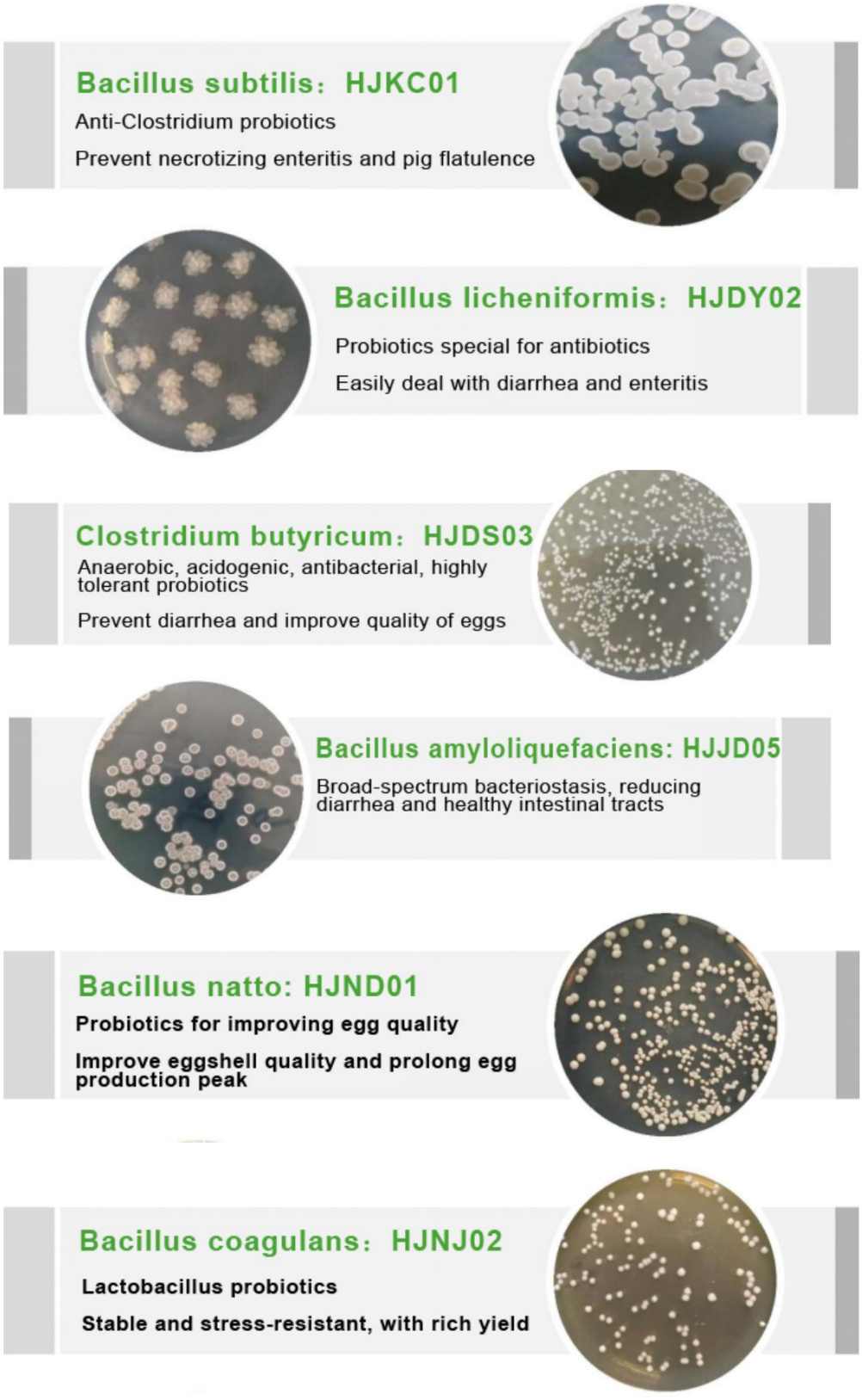

Screening out excellent strains is only the first step of a good product. Advanced fermentation

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technology, large-scale production and cheap products are needed, so that our customers can really enjoy the benefits brought by the products.