Interview Records of Miss Wang Xiaoyan

1. Research methods

This study adopts the interview research method of social survey method, and adopts in-depth interview and non-frame questioning. The researcher designed relevant questions for the research topic. During the interview, the interviewees were asked to state their answers and express their opinions on this question within a limited time. After the interview, the researchers summarized and refined the answers of the interviewees, and completed the writing of interview records with the interviewees' review and approval.

2. Respondents

Researchers invited COFCO NHRI senior engineer Wang Xiaoyan to interview. COFCO NHRI is a leading supplier of diversified products and services in the agricultural and food sectors in China, with an important position in the amino acid fermentation industry. Wang Xiaoyan engineer in the group for a long time as a research and development work, accumulated a wealth of field production experience.

The team believes that Wang Xiaoyan is not a professional synthetic biology expert, but has a lot of connection with the application field of the product developed by this project, and her Suggestions are of great

help to the project team.

3. Interview records

According to the project team's evaluation of the respondents, the project team took seeking "feedback" as the core objective of this interview and formulated the following questions. In order to obtain the required complete information, the researcher provided the interviewee with some information and documents about the project in advance. During the interview, the researcher would use the keywords in the introduction of question design in the following text and “Could you please give an example?” And other words to prompt.

3.1 Could you please briefly introduce the significance of acid resistance for the whole amino acid fermentation?

Wang: To improve acid resistance is to improve its resistance to stress and acid. Because in the process of amino acid fermentation, it is itself acid production. Under the condition of high PH, inhibition of products will occur to the general microorganism. If the product inhibition is removed, it is equivalent to improving its acid resistance, and the yield may be further improved. In fact, the improvement of acid resistance is actually more of a process to remove the product inhibition effect. If the strain is fragile, after the acidity increases, a lot of energy will flow into

the survival pathway instead of into the pathway of producing amino acids, and the yield will correspondingly decrease, which is unacceptable to enterprises.

3.2 What are the current industrial methods to improve the acid resistance of bacterial strains?

Wang: Actually, I don't think there is a good method. The strains used in each factory must be more suitable in its fermentation system. But I believe there is space for growth in this area. In the factory, more screening methods are adopted, such as whether the strain is suitable for this environment and suitable for the current fermentation process. If it is relatively well tolerated. However, generally, the factory will not take the initiative to improve the acid resistance, because many strains in the factory are excellent strains acquired through purchase or other means, so the factory will use this technology instead of taking the initiative to reform. And if the strain is not productive, he may not be able to modify it. From the point of view of sugar and acid conversion rate, normal metabolism consumes the necessary sugar, and all other sugars are converted into amino acids, which is equivalent to a theoretical value. If the fermentation level of the bacteria is close to the theoretical value, it means that there is not much room for the bacteria to change.

However, there is also the influence of materials. If the sugar content of

the materials used is high, the corresponding acid may be high, so the living environment of the strain may change, and the relative yield may not be as high as before. This shows that the ability of bacteria to resist environmental fluctuations is not strong, the productivity will be reduced.

During the fermentation process, the factory will adjust the PH value of the fermentation environment by adding alkali, which is also a method. Although science can screen out acid-resistant strains, the PH in the fermentation environment is constantly changing, which may exceed the resistance value of the strains, resulting in yield reduction. Therefore, enterprises dare not take this risk.

3.3 This project applies the database construction technology of synthetic biology to provide a metabolic optimization method of flow control for actual fermentation production. Acid resistant strain applied in amino acid fermentation. Do you think this project will be applied in the current biofermentation industry?

Wang: I think there must be an application prospect, but I don't know how big it is. It can be controlled in a certain PH range precisely so that the strain can grow well. And will ensure its production performance. For production, any kind of bacteria is ok, but it must be productive, and the yield cannot be low. The bacteria can be regulated in an acidic

environment, which is fine. But my criterion is that no matter what happens to the PH in my fermentation tank, the yield cannot be too low. Because in fact, the energy used to adjust the PH, whether it's PH or PH, is relatively cheap. But production cuts, this is the biggest loss for the enterprise.

A lot of microbes, when they're under pressure, they have to turn off some system to keep them growing, and what they turn off is probably their ability to produce amino acids, not their yield. What is done in the laboratory is completely different from what is done in the factory, and the production performance is completely not up to the standard.