

Development of Drink for Cranial Nerve Protection

I. Research Team Members

Department	Name	Position
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II. Content of Cross-School Research and Development

This project was performed and cooperated with the Department of Food Science, National Penghu University of Science and Technology and Li Simply Plus Co., LTD. to develop an drink and investigate its protective effect on methylglyoxal-induced cranial nerve damage in mice. Overall, we expected that the results of the implementation of this project can be used as a basis for the development of the drink for health food that protects the cranial nerve.

III. Description of Industrial Needs and Research Result Applications

Alzheimer's disease is an irreversible neurodegenerative disease that affects approximately 60-80% of all dementia cases. Alzheimer's disease is characterized by the destruction of neurons in the brain, causing patients to have difficulties in thinking, learning or cognition. Eventually, it may even damage the areas of the brain that control eating or cause organ failure and other problems, eventually leading to death. According to statistics in 2020, approximately 44 million people worldwide are suffering from Alzheimer's disease, and according to statistics from the Alzheimer's Association, Alzheimer's disease is the sixth leading cause of death in the United States. In 2050, the number of cases in the United States alone will increase to 13 million. In addition to age, genetics or family history, the risk factors for Alzheimer's disease may also affect the development of Alzheimer's disease, such as smoking, alcohol, sleep, education, social participation or diet, especially In

terms of diet, modern people often ignore the high sugar or high fat content of food in pursuit of delicious food, which in turn causes harm to their health. Such high-sugar and high-fat foods are most likely to contain compounds that are harmful to the human body, such as methylglyoxal (MG). There is evidence that the ingredients in green bananas may help protect brain nerves, and they contain physiologically active phenolic compounds, which are beneficial to humans and have antioxidant and anti-inflammatory properties. Therefore, this project successfully used green bananas and oats as test samples to make drinks. The results showed that the drinks had a protective effect on MG-induced brain nerve damage in mice.

IV. Performance of Cross-School Research and Development

Through the implementation of this project, one undergraduate student and one graduate student were instructed. One practical project was completed and one master's thesis is ongoing. We signed an industry-university cooperation plan with Simply Plus Co., LTD this year.

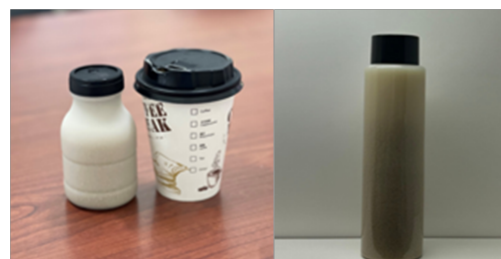


Fig. 1: Unripe banana oat beverage

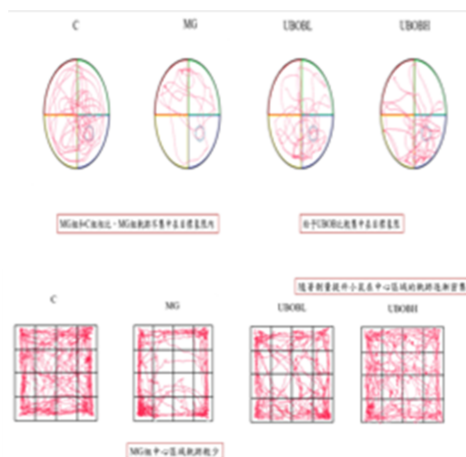


Fig. 2: Unripe banana oat beverage improves memory and anxiety in mice.