SAN-LANG WANG HAS DISCOVERED A NEW SPECIES STRAIN OF A NOVEL NATTOKINASE PRODUCING BACTERIUM: TKU015 UNIQUE IN THE WORLD

Research at TKU has broken through again! Graduate Institute of Life Sciences Director San-lang Wang has discovered the new pseudomonad TKU015 which can produce a new species strain of a novel nattokinase producing bacterium while Associate Professor Yau-hung Chen at the same institute has fostered the mutated zebrafish , which can be applied in medical products and cosmetology or beauty treatment.

Director San-lang Wang first discovered TKU015 in the soil of TKU campus. This new bacterium will be registered and named after Tamkang or Tamsui. It has been identified by our National Biological Resources and Research Center as a new type of bacterium. He has already applied for the patent from both the Intellectual Property Office of Taiwan and the U.S. Patent and Trademark Office. He hoped to cooperate with manufacturers and apply it in developing nutritious dietary supplements, cosmetics and medical products.

The source of producing nattokinase activating enzyme is from beans, and the production of it must inoculate nattokinase bacteria into steamed and boiled beans. But after discovering the new bacterium, the production of it no long depends nattokinase bacterium alone. Moreover, TKU015 is made from shrimp shells and other waste materials as its only carbohydrate sources. From the fermented materials, it not only purifies and distills nattokinase activating enzyme and chitonsan decomposing enzyme but also solves the garbage problem for shellfish processing factories. It really turns the decaying waste into miraculous treasure. The research findings have already been published in the well-known SCI listed Process Biochemistry and Carbohydrate Research.

San-lang Wang has pointed out that nattokinase activating enzyme can dissolve thrombus and help to prevent and improve potential strokes, myocardial infarction and other related cardiovascular diseases. It can contribute a great deal to human health. Right now he is devoting himself to finding the possible ways to transplant nattokinase activating enzyme gene into other safely edible fungi in order to explore the possibilities of producing the nattokinase activating enzyme and fungi in quantity.

In addition, he has also discovered another five new bacteria in the soils of Tamsui and Shilin, which can transform shrimp shells and other chitonsan-rich wastes into useful enzymes and anticancer materials. He has been invited to publish his research findings by the Ocean University of China in Mainland and Nagasaki University of Japan on Nov. 12 and Dec. 4. Smilingly he said, “Taiwan is indeed a treasure island. When so many scientists have believed that new bacteria have been all discovered on earth, I have luckily discovered some useful new bacteria here.”

Then Yau-hung Chen has fostered a dozen of gene-mutated zebrafish whose head bones are mutated, causing the lower jaw projected with an extra mouth. Prof. Chen has remarked that this is the first time to have discovered that the head bones of zebrafish are mutated like the bail of human chins. He has hoped to apply the research findings to treat human face disfigurations after further researches. This will be helpful for reshaping human cosmetology. Zebrafish is a small tropical fish which is widely used in vertebrate's embryonic development researches. The gene of this fish is highly similar to that of humans. It has so many eggs which are transparent, and it grows fast. The transplanting of its gene is simple, so it is easy for experiment. Prof. Chen has emphasized that 99% of the genes of the zebrafish have been clarified in research. After finding the mutation gene of the fish, we can search for similar genes in the human gene banks and will be able to discover the causes of head bones to form different faces and chins like square face or a chin with a bail. He said, “We’ll cooperate with hospitals to conduct deeper researches to

find out the causes and search for medical cures for face disfigurations.”

Prof. Chen has explained, “We guess that the zebrafish’s cell nucleus protein Y (NF-Y) is the important gene to cause the growth of cartilage, and humans also have the similar structure. After destroying the function of the NF-Y gene and taking it away with scientific method, we discover the cartilage of the fish’s lower chin shrinks and forms disordering shapes. But the cartilage cannot be calcified to become hard bones. When we put the NE-Y back, the lower chin of the fish will normally calcify and grow back. This proves there is important connection between the NF-Y gene and the head bone development.” (~ Dean X. Wang)