**NTU scientists develop biomaterial to help in bone repair**

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Bone repair often requires additional surgery to extract a patient’s own tissue, but scientists at the Nanyang Technological University (NTU) have developed a biomaterial that could help make it a cheaper and less painful process.

And they are making the material from frog skin and fish scales, which are usually discarded by farmers. The biomaterial has a wide range of potential biomedical applications, said Assistant Professor Dalton Tay of the NTU School of Biological Sciences, who led the multi-disciplinary study.

The porous biomaterial acts as a scaffold for bone-forming cells to adhere to and multiply, leading to the formation of new bone. It could be used to help with the regeneration of bone tissue lost to disease or injury, such as jaw defects from trauma or cancer surgery. It could also assist bone growth around surgical implants, such as dental implants.

Clinical Associate Professor Goh Bee Tin, director of research at the National Dental Centre Singapore, who was not involved in the study, said: “We see many potential dental applications ranging from the regeneration of gum tissue in periodontal disease, to bone for placement of dental implants, to jaw bone following tumour surgery.”

The research team believes the biomaterial is a promising alternative to the current practice of using a patient’s own tissue.

At the same time, the production of the biomaterial helps to reduce aquaculture waste, as it is synthesised from discarded frog skin and fish scales. Ms Chelsea Wan, director of Nature and Biodiversity Institute, Melaka, said that aquaculture waste can also be converted into green chemicals and materials to help reduce environmental contamination.

To make the biomaterial, the scientists extracted collagen from bullfrog skin and a compound from the fish scales, which are major components found in bones. They give the biomaterial a structure, composition and ability to promote cell attachment that are like bone. The components also make the biomaterial tough.

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The researchers aim to test the biomaterials' wound healing efficacy and make it more sustainable.

Speaking to reporters at a briefing yesterday, Prof Tai said that the team is moving to test the biomaterial on animal models in the next phase of the project and that it would take at least five years before it can be applied to clinical settings.

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