

Aiding diabetics via bitter gourd product

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ABOUT three million people in the world are suffering from diabetes and the highest number of recorded cases is in Asia.

The Malaysian government spends more than RM2.04 billion a year to treat diabetic patients, in which RM10 million were for the costs of wound dressing using costly imported products.

Diabetic patients contributed about 50 to 60 per cent of medical cases that are related to injuries, while 10 per cent are those of accidents, surgeries, and others.

Taking this into consideration, and to help reduce treatment costs, Universiti Putra Malaysia (UPM) Faculty of Biotechnology and Biomolecular Sciences' Professor Dr Rosfarizan Mohamad and her team of researchers have produced the "Medicated Wound Dressing", which uses low-cost green technology product made from bitter gourd and starfruit.

The idea began when Rosfarizan, who is research head, saw poor diabetic patients in Hospital Sultanah Nur Zahirah, Kuala Terengganu, three years ago.

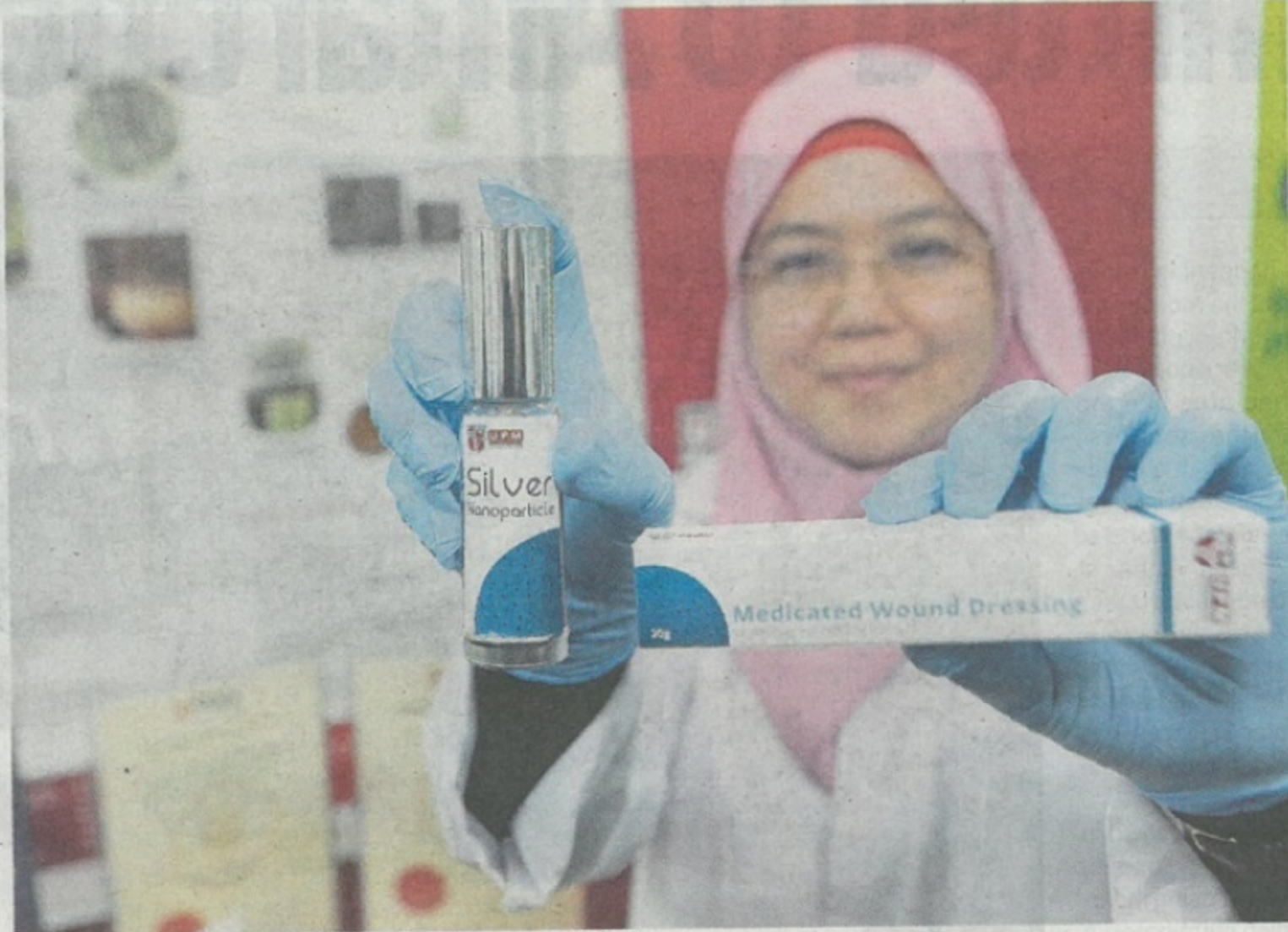
At that time, her father was being treated at the hospital after he met a motorcycle accident. He was seriously injured and suffered a broken leg. He also incurred a massive injury on his heels that needed to be cleaned every two days, which occasionally became infected due to his diabetic condition.

"I was shocked to see my father lying there with his open wound. There, it struck me that other diabetic patients were going through the same ordeal. I realised that the healing process will take a longer time depending on the severity of their injuries and sugar levels."

This, she said, was further compounded as the patients were financially burdened by wound care cost.

"The prices of effective medicines are expensive as most are imported products," she said, adding that this had prompted her to find a better and cheaper solution to clean and heal diabetic wounds.

Rosfarizan, who travelled from Kuala



Professor Dr Rosfarizan Mohamad showing the innovative medicated wound dressing product she and a team of researchers invented during a media briefing at the Putra Science Park, Universiti Putra Malaysia.

PIC BY AIZUDDIN SAAD

Lumpur to Terengganu every week for three months to take care of her father, had spent thousands of ringgit on medications. She also hired nurses to clean his wound at home.

She said being in a ward full of diabetic patients was a new experience for her and that every day nurses would make their rounds to clean those with chronic diabetic wounds.

Rosfarizan, who is the faculty's research and graduate studies deputy dean, said a green medicated wound dressing could help patients heal faster.

She added that it promoted healing by preventing the wound from getting infected.

"Our locally-produced green dressing is cheaper and more effective than what's available in the market today. It can heal wounds in less than 48 hours, whereas products in the market take about 72 hours," said Rosfarizan during a media briefing held at the Putra Science Park, UPM recently.

She said this product was based on the use

of bacterial nanocellulose, which are produced from locally isolated bacteria found in rotten starfruit and silver nanoparticles from bitter gourd extracts.

"This combination produces a new product known as bacterial nanocellulose silver nanoparticles composite or green composite.

"The green composite is a new product for chronic wound healing and dressing materials targeting diabetic patients.

"It offers a cheaper medicated wound dressing at a price of 40 sen per gram, compared with other products priced at RM2 per gram.

"A diabetic patient spends about RM900 per month just to clean their wounds, but the bitter gourd dressing will cost only RM180 per month. That's because the dressing is cheaper to produce and it's environmentally-friendly," she added.

The product, she said, was more economical and green, which had antimicrobial and healing properties.

"It is proven and tested to be more effective on chronic and traumatic wounds, which is suitable for diabetic patients. The product can be directly applied to the wound as gel, or can be prepared as another layer in a bandage, or in solution form as a sprayer."

Rosfarizan said diabetic complications, such as foot ulcer among the elderly, was one of the main reasons of admission to hospitals.

Approximately 617 million people have reached 65 years old, which accounted for 8.5 per cent of the world's population. These

figures prompt the need for better wound care and long-lasting treatment. This number is expected to increase to 1.6 billion by 2050.

There are plans to commercialise the product as there is a huge export market to tap into. The team has been working on the dressing since 2016 and expected to complete by 2021.

She said the plan was to sell the product for less than RM30 per 15g, which makes it affordable, especially for the Bottom 40 lower-income group.

Rosfarizan and her team hoped that their product would address the issue.

She said her team was ready to meet with interested investors and companies for research and commercialisation purposes.

"Researchers should always seek solutions to the healing process by using more local resources, which are more conveniently available and inexpensive."

The researchers involved in the patent-pending innovation are Muhammad Izzuddin Zahimi, Dr Mona Moniri, Dr Amin Boroumandmoghaddam, Dr Sussan Azizi, Zulhimli Masri, Dr Mohamad Ridzuan Yahya, Professor Dr Raha Abdul Rahim and Professor Madya Dr Wan Zuhainis Saad.

The innovative product won a gold medal at the International Invention, Innovation & Technology Exhibition Malaysia 2019 on May 4.

It also received a grant from UPM amounting to RM50,000 and it is in the process of getting another RM250,000 grant from the Education Ministry for further research.



Professor Dr Rosfarizan Mohamad (left) with Putra Science Park director Professor Dr Samsilah Roslan and researcher Dr Mohamad Ridzuan Yahya (right), who is also the Faculty of Architecture, Planning & Surveying lecturer.