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Singapore-Based MedTech startup converts cashew waste into an organic anti-microbe solution

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As part of ongoing sustainability efforts, N&E Innovations has partnered up with Intersnack Group, a leading savory snacks producer in Europe, to transform the company's cashew waste into a line of organic disinfectant products through their cutting-edge technology.



Singapore-based medtech startup N&E Innovations has partnered with Intersnack Group, a leading savory snacks producer in Europe, to create Vi Kang 99, an active compound synthesised from cashew waste.

Through this collaboration, N&E Innovations developed a cutting-edge technology which is able to effectively recycle cashew testa, the reddish-brown skin covering cashew kernels which are an abundant byproduct of the cashew processing industry. The active ingredient has been added to N&E Innovations' face mask range, Vi-MASK, as well as its most recent organic disinfectant range, C2+.

The collaboration is one of several ongoing sustainability initiatives by N&E Innovations to provide consumers and businesses with an alternative, organic solution created through rigorous scientific research and development, to prevent and protect individuals from deadly viruses and bacteria.

The startup, N&E Innovations identified the importance of sustainability and the harsh effects of chemicals as major pain points to eventually engineer its innovative molecular coating technology, *Vi Kang 99*.

Cashew waste is transformed through a patent-pending process and is mixed with other types of organic compounds scientifically derived from food waste, including chitosan (a sugar obtained from the hard outer skeletons of shellfish) to finally produce Vi Kang 99. Upon contact with oxygen and moisture in the air, Vi Kang 99 begins to generate Reactive Oxygen Species (ROS), a molecule which is naturally found in all living cells. The role of ROS is to regulate and maintain cell homeostasis.

Although the actions of ROS are short lived, the unique quality of Vi Kang 99's patented core-shell technology enables the continuous release of ROS, giving it a long-lasting and self-renewing capacity. This allows Vi Kang 99 to inactivate up to 99% of the viruses and bacteria that it comes in contact with for long periods of time, including the pathogenic SARS-CoV-2, human coronavirus (OC43), H3N2 (Influenza A), EV71 (Enterovirus), Klebsiella pneumoniae, and Staphylococcus aureus

amongst many others.

C2+ is a safer and earth-friendly alternative to the harsh chemical-based options presented to customers. In applying *Vi Kang 99* technology to their product range, N&E Innovations has strengthened their existing offerings for widespread use, a move most critical amidst this global pandemic. Intersnack Group is also currently working with Nanyang Technological University's Food Science and Technology Programme on an ongoing research collaboration to improve its cashew nut processing efficiency.

One coat of this organic, plant-based and yuzu-scented multi-purpose spray disinfects and coats any surfaces, providing users with up to 7 days of antibacterial protection and preventing further bacteria growth.

"This plant-based technology offers a sustainable alternative to disinfectants currently available on the market. It differentiates from other disinfectants with the use of side-streams of food processing. Their antimicrobial potency against a wide range of microorganisms is also demonstrated by the ROS continuously released from the innovative core-shell developed by the company," said Professor William Chen, a food technology and food safety expert who has developed plant-based antimicrobials as natural food preservatives.

"The partnership has greater sustainability gains within the medtech industry. Both companies share a common goal of safekeeping the environment and ensuring a world liveable for future generations. Through this partnership we hope to challenge our R&D capabilities to further our mission to provide sustainable, organic and effective solutions that can benefit our society in the long run," said Didi Gan, Founder of N&E Innovations.

"Intersnack Group is thrilled to work with N&E Innovations as our core values are well aligned. We hope to not only excite customers and enrich their lives in a holistic manner but also to continue upholding ethical business practices and guidelines that govern our daily work processes, and work towards developing meaningful interactions with business partners who are strong advocates for sustainability," said Abel Santos Sáez, Chief Operating Officer of Intersnack Cashew Company.