LIFE HACKS

Could this Be the Future: Biodegradable Food Wrap Made Using Industrial Waste?

By bestfolkmedicine · 17/03/2021 · 2 min read



A team of researchers from the Sao Paulo State University in Brazil successfully created a food wrap using repurposed industrial waste.

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The goal is to lower the need for using plastic wraps which takes centuries to degrade and is contributing to pollution.

The team used bacterial cellulose scraps from industrial processing and HPMC.

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The combination results in a biodegradable film which is better in performance than HPMC on its own.

Reusing the Waste, but also Creating Something New

According to the co-author of the study and researcher at the Center for Development of Functional Materials with PhD in chemistry Marcia de Moura Aouada, they wanted to fill out the HMPC matrix with bacterial cellulose nanocrystals to better its advantages.

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They wanted to create greener protocols for creation of new composites, from the start to the finish, so they repurposed the waste.

Aouada is focused on studying the films made using biodegradable films and renewables.

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The author of the study, Pamela Melo, a graduate in material sciences at UNESP, says that low mechanical stretch is one of the limitations of HPMC films and films from other biopolymers.

How They Made the Biodegradable Film?

First, they bought cellulose scraps from a company located in the Parana state which makes wound dressing Biofilms.

Afterwards, they milled the scraps into powder and converted them into films for food packaging. Then, they exposed the powder to sulphuric acid hydrolysis which resulted in a bacterial cellulose nanocrystal suspension.

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After this process, they combined it with a HPMC diluted in water in order to make a film-forming dispersion. They deposited it onto a substrate.

In a period from 24 to 48 hours, the solvents evaporated and left a robust and less permeable product.

Aouada noted that it’s not sufficient to only create good composites-but, they need to locate the best possible solutions to get the best film properties through factors like concentration of nanoparticles and viscosity.

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She explains that the major advantage of this material is the protection of our environment. The next phase is to keep testing the film-forming dispersions and to study other techniques for dispersion and check out their biodegradability.

Sources:

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