Could Asia’s passion for tofu help solve the plastic crisis?

By Sarah Leesona, CNN

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Could the humble soybean help save the planet? (0:03)

[Image: A staple in the Asian diet, soybeans have been used to make tofu, miso soup, and soy sauce for thousands of years. But now, the plastic revolution is also being fueled by a bio-based product: soya-based plastic.]

Soybeans are a crucial ingredient in tofu, a food that’s gaining popularity around the world. The recent increase in demand for tofu is due in part to the growing awareness of the environmental impact of plastic.

William Chen, a professor of food science and technology at the University of Hong Kong, has developed a biodegradable plastic from soybeans. It’s made of cellulose, a substance extracted from the soybean waste generated by soybean product manufacturers.

“Soybeans are incredibly versatile,” Chen says. “And as the demand for biodegradable products grows, our research is focused on developing new materials that can replace traditional plastics.”

Cellulose-based plastic is one of the most promising bio-based plastics on the market. Its strength, flexibility, and biodegradability make it a competitive alternative to traditional plastics.

“With our process, we can produce plastic that is biodegradable, which means it will break down in the environment, reducing the amount of plastic that ends up in landfills and oceans,” Chen explains.

Plastics are a matter of everyday life today, but the environmental costs of plastic production are significant. The production of plastics involves the use of non-renewable resources, such as oil and natural gas, which represent a finite resource.

With the increase in demand for biodegradable plastics, researchers are working to develop new materials that can replace traditional plastics. One promising material is a biodegradable plastic made from soybeans.

“With this new material, we can create plastics that break down in the environment, which is a major advantage over traditional plastics that remain in the environment for hundreds of years,” Chen says.

Biodegradability is another potential hurdle. Some biodegradable plastics break down only when exposed to temperature extremes, degrading in a matter of days or weeks, while others remain intact for years.

Chen is not the only researcher working to develop plastic alternatives to single-use plastics. Other innovative products include materials that mimic the strength and flexibility of traditional plastics but are biodegradable, making them a more sustainable alternative.

Chen says the soy-based plastic is digestible by microbes and dissolves completely within a week when exposed to conditions similar to those found in the human digestive system. This makes it a promising alternative to traditional plastics that can cause harm to marine life and other wildlife.

Chen’s research is not only focused on developing new materials but also on educating the public about the importance of reducing plastic waste.

“By using sustainable materials and reducing our reliance on single-use plastics, we can help protect the environment and ensure a healthier future for generations to come,” Chen says.

Chen hopes that by highlighting the benefits of soybean-based materials, he can help raise awareness about the potential of biodegradable plastics as a solution to the plastic pollution crisis.