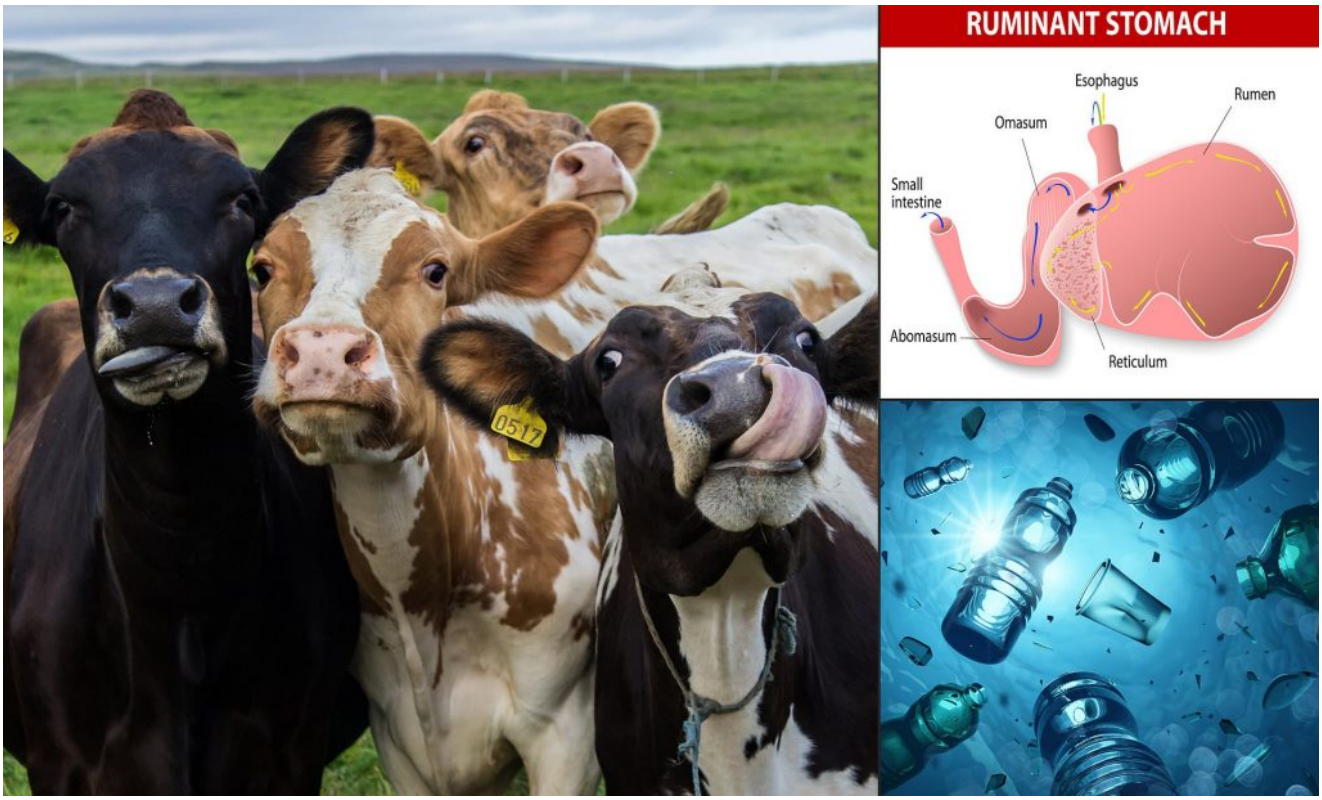
HEALTHY TIPS

Microbes Found in Cow Stomach can Dissolve Plastic-Could this be a Sustainable Way to Lower Plastic Pollution?

By bestfolkmedicine · 03/07/2021 · 2 min read



A new study published in the journal Frontiers in Bioengineering and Biotechnology found that the microbes in the stomachs of cows are capable of dissolving plastic and potentially offer a new, sustainable method to clear out plastic waste.

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These microbes come from the rumen, one of the four parts that make up the bovine stomach. It's also the first and the biggest.

The scientists from the Austria University of Natural Resources and Life Sciences believed these bacteria may be beneficial as they dissolve natural plant polymers in the cows' diet.

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Cows may Help Us Reduce Plastic Pollution?

During their experiments, the researchers concluded that these diverse microbes successfully decomposed plastic quicker than the single organisms they tested previously.

The rumen contains a huge amount of microbes that help the animals digest food easier, explains the author of the paper and biotechnology expert Doris Ribitsch from the University of Natural Resources and Life Sciences in Vienna.

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She also added that they suspected that some of the biological activities could be beneficial for polyester hydrolysis (a reaction that decomposes plastic).

The scientists looked at three different types of polyesters, one of them was PET, a type of synthetic polymer that's used in production of packaging and textiles.

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The remaining two were PBAT, a biodegradable material used for production of compostable plastic bags and PEF, a bio-based material acquired from renewable, plant-based sugars.

An Austrian slaughterhouse provided the researchers with the rumen liquid that they incubated with all of the three plastic types, both in powder and film form, to test the effectiveness of the microorganisms' breakdown of the materials.

What Did the Researchers Discover?

The team concluded that the cows' microbes from their rumens dissolved all of the three plastics with the powdered versions faster than the films. When compared to the results from other studies using single microorganisms, the team concluded that the liquid from the rumen was better.

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This means that a major role in the effective decomposition of plastic plays the combination of enzymes that the microbes use rather than a single enzyme.

The study was done at a lab scale. Dr. Ribitsch notes that further, larger scale research won't be difficult to imagine considering the large rumen amounts accumulated on the daily in slaughterhouses.

What Are the Future Plans of the Study's Authors?

Since their initial study is complete, the researchers are now hoping to conduct further research in this area since microbial communities haven't been explored enough as a possible eco-friendly resource.

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