

Good news for banana lovers: Help may be on the way to slow that rapid over-ripening

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A solution finally may be at hand for the number one consumer gripe about America's favorite fresh fruit — bananas and their tendency to ripen, soften and rot into an unappetizing mush, seemingly in the blink of an eye.

Scientists speaking here today at the 244th National Meeting & Exposition of the American Chemical Society, the world's largest scientific society, described efforts to develop a spray-on coating that consumers could use to delay the ripening of those 6.4 billion pounds of bananas that people in the U.S. eat every year.

The coating is a so-called "hydrogel," a superabsorbent material like those with many medical and commercial uses, made from chitosan, a substance derived from shrimp and crab shells. Xihong Li, Ph.D., who presented the report, noted that chitosan is attracting considerable attention in efforts to keep fruits and vegetables fresher longer due to its action in killing bacteria that cause produce to rot, low cost and other properties. Until now, however, it has not been used to slow the ripening of bananas.

"We found that by spraying green bananas with a chitosan aerogel, we can keep bananas fresh for up to 12 days," said Li, who is the study's leader. "Once bananas begin to mature, they quickly become yellow and soft, and then they rot. We have developed a way to keep bananas green for a longer time and inhibit the rapid ripening that occurs. Such a coating could be used at home by consumers, in supermarkets or during

shipment of bananas."

Li explained that bananas, like other fresh fruit and vegetables, are alive and actually "breathing," or respirating. He is with Tianjin University of Science and Technology, Tianjin, China. Like other fresh fruit and vegetables, bananas stay alive after picking. Like people, bananas breathe, or respire, taking in oxygen and releasing carbon dioxide — but through their skin. The more a banana respire, the quicker it ripens. Unlike many other fruits, the respiration rate in bananas does not slow down, and bananas do not ripen slowly. The banana's pulp releases a chemical that boosts respiration, and the pulp converts into the sugars that produce that sweet, banana taste. As respiration continues, however, the process speeds up, and bananas become unpleasantly sweet and mushy. Bacteria on the banana skin start to thrive and cause the banana to rot.

In their study, Li's team showed that the chitosan hydrogel coating slowed down respiration and killed bacteria that cause rotting, keeping bananas fresh for almost two weeks. But banana lovers should not go [bananas](#) over the hydrogel coating just yet. Li's team is on the trail of a new ingredient for producing the hydrogel that would replace an existing ingredient that would not be used commercially.

More information:

Abstract

The aim of this study was to provide an overview of chitosan/PVA hydrogels and related networks formed by chemical crosslinking, which are intended for inhibiting bananas after-ripening. The structural of the system is discussed with emphasis on the mechanism of the network-forming with electron microscopy evaluations. Hardly earlier review discussed chitosan/PVA hydrogels the potential influence on

preservation of fruit and vegetables. The antibacterial property of chitosan was reserved well after investigated by isolated Staphylococcus aureus and Escherichia coli. Chitosan/PVA hydrogels retained green and firmness of bananas significantly compared with pure chitosan film and the control(P

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