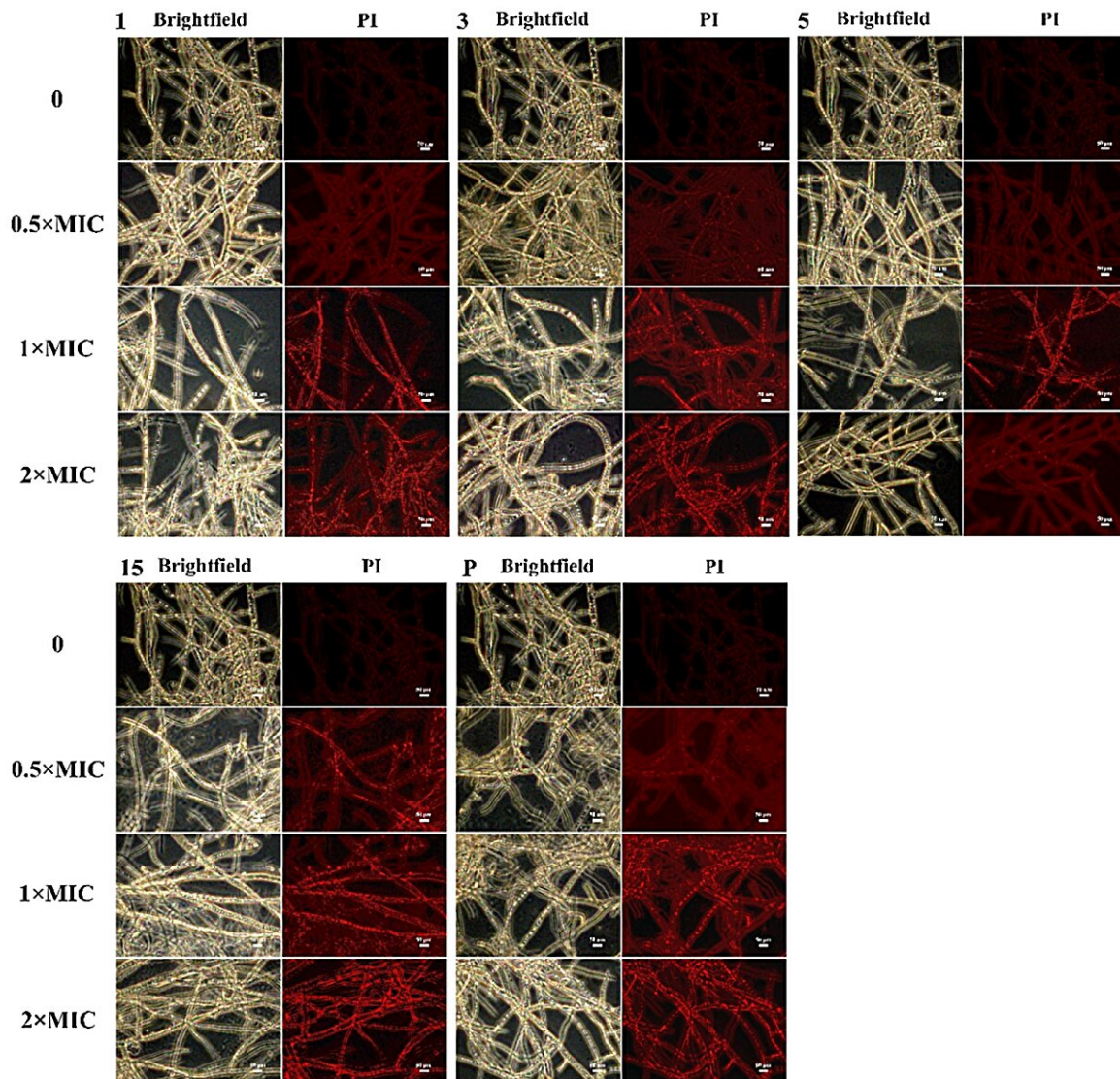


# Sunflower extract fights fungi to keep blueberries fresh

October 25 2023



Effect of compounds 1, 3, 5, and 15 and boscalid (P) on the plasma membrane integrity of *B. cinerea*. The scale bar represents 50  $\mu\text{m}$ . Credit: *Journal of*

Opening a clamshell of berries and seeing them coated in fuzzy mold is a downer. And it's no small problem. Gray mold and other fungi, which cause fruit to rot, lead to significant economic losses and food waste.

Now, researchers report in the [Journal of Agricultural and Food Chemistry](#) that compounds from sunflower crop waste prevented rotting in blueberries. They suggest the [food industry](#) could use these [natural compounds](#) to protect against post-harvest diseases.

Sunflowers are cultivated around the world for their seeds and oil, but the flower stems—known as receptacles—are generally considered to be a waste product.

Noting that this crop is particularly resistant to many [plant diseases](#), Xiao-Dong Luo, Yun Zhao and colleagues decided to investigate whether its receptacles might contain chemical constituents responsible for this protective effect. They also wanted to find out if these compounds could be used to fend off fungal plant pathogens in fruit, as a way to avoid the toxicity and resistance associated with chemical fungicides.

The researchers used methanol and [ethyl acetate](#) to prepare extracts from sunflower stems. They then isolated and identified the components in these extracts, focusing on diterpenoids, which are known to have biological activity.

They found 17 diterpenoids, including four previously unknown compounds. Most of the diterpenoids showed activity against gray mold. Four of the compounds—including two of the newly identified ones—were effective at destroying the plasma membrane of this fungus,

causing its cells to leak and preventing it from forming biofilms.

In another test, the researchers briefly wet blueberries with the receptacle extracts, then dried the fruits and injected them with mold spores.

Over a period of six days, the receptacle extracts protected almost half the berries from mold growth. The scientists conclude that sunflower stem extracts could be used as a natural biocontrol agent to prevent post-harvest disease in fruit.

**More information:** New and Antifungal Diterpenoids of Sunflower against Gray Mold, *Journal of Agricultural and Food Chemistry* (2023). DOI: [10.1021/acs.jafc.3c05553](https://doi.org/10.1021/acs.jafc.3c05553).  
[pubs.acs.org/doi/abs/10.1021/acs.jafc.3c05553](https://pubs.acs.org/doi/abs/10.1021/acs.jafc.3c05553)

Provided by American Chemical Society

Citation: Sunflower extract fights fungi to keep blueberries fresh (2023, October 25) retrieved 27 April 2024 from <https://phys.org/news/2023-10-sunflower-fungi-blueberries-fresh.html>

This document is subject to copyright. Apart from any fair dealing for the purpose of private study or research, no part may be reproduced without the written permission. The content is provided for information purposes only.