Ancient grain shows early lab promise against a key Alzheimer's protein

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Credit: Unsplash/CC0 Public Domain

Imagine a simple, everyday foodstuff with a surprising but powerful defense against one of the most serious threats to public health today. What if there's a basic item you keep at home that could represent a

brand-new field of brain defense?

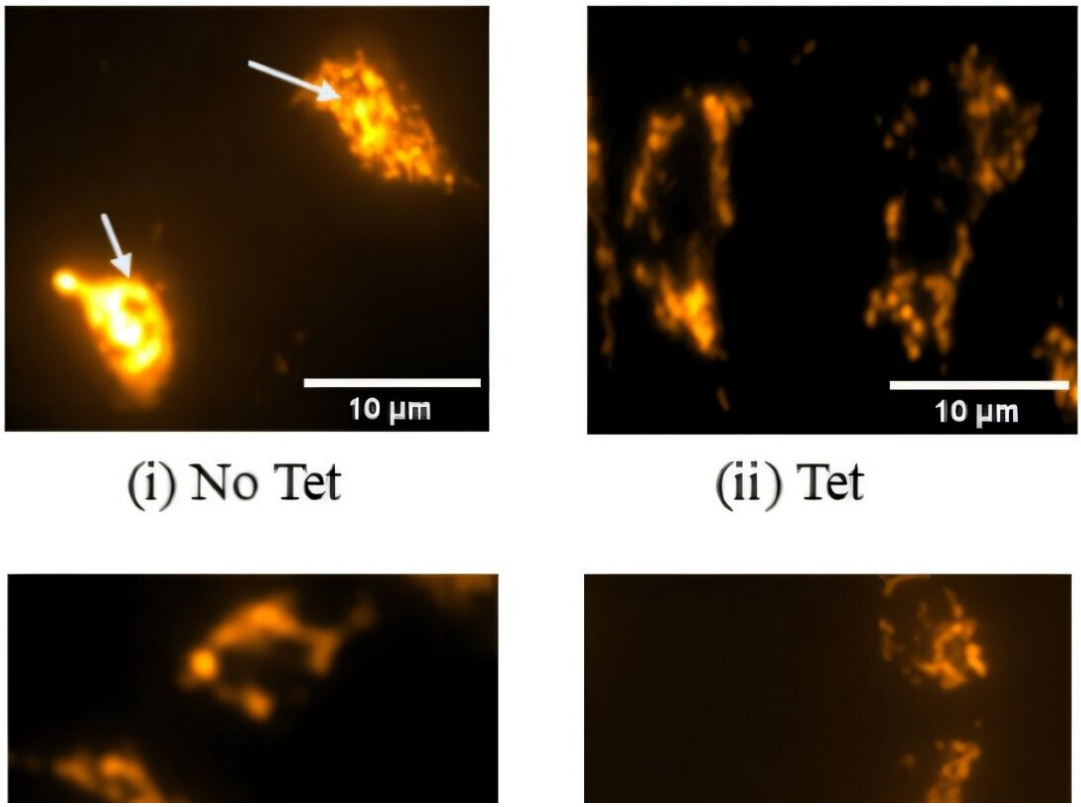
Sorghum is a widely available cereal crop. Scientists recently conducted an experiment to test its effects and found something striking. They found that extracts from this ancient plant significantly lowered levels of the dangerous amyloid-β, known to be a culprit in the formation of Alzheimer's plaques.

Polyphenols in sorghum "inhibited $A\beta_{42}$ aggregation by 67–76%," resulting in a ~70% reduction in toxic aggregates. It is a surprising discovery because substances found in a simple grain may affect several mechanisms responsible for Alzheimer's disease at once. These findings are published in Nutrients.

Ancient grain, modern defense

Sorghum, a grain found in many kitchens, comes in a rainbow of colors like white, red and black. What makes it special is that it's packed with natural plant compounds called polyphenols, known for their protective qualities. To see whether these compounds could help fight Alzheimer's, scientists took these polyphenols from different colored sorghum grains—black, red-brown and red—and prepared them for testing.

They then put these sorghum extracts into special lab tests designed to watch how the sticky Alzheimer's proteins, called amyloid-beta, clump together. What they saw was remarkable: Almost every sorghum extract caused a huge drop in these protein clumps, typically reducing them by about 67–76%. (Only one type of red sorghum was a bit less effective.) The extracts, especially those from black sorghum, significantly cleared away the troublesome amyloid buildup. This impressive anti-clumping effect paved the way for the next crucial step: testing these extracts in living cells.



MC-65 cells were treated with or without tetracycline, 250 µg/mL polyphenols or 125 µg/mL quercetin for 72 h, then labeled with CellRox Orange and imaged. Intense orange fluorescence indicates localization of ROS in the nuclear and in the perinuclear membrane (a) i–vi. White arrows indicate cells under oxidative stress. Credit: *Nutrients* (2026). DOI: 10.3390/nu18132121

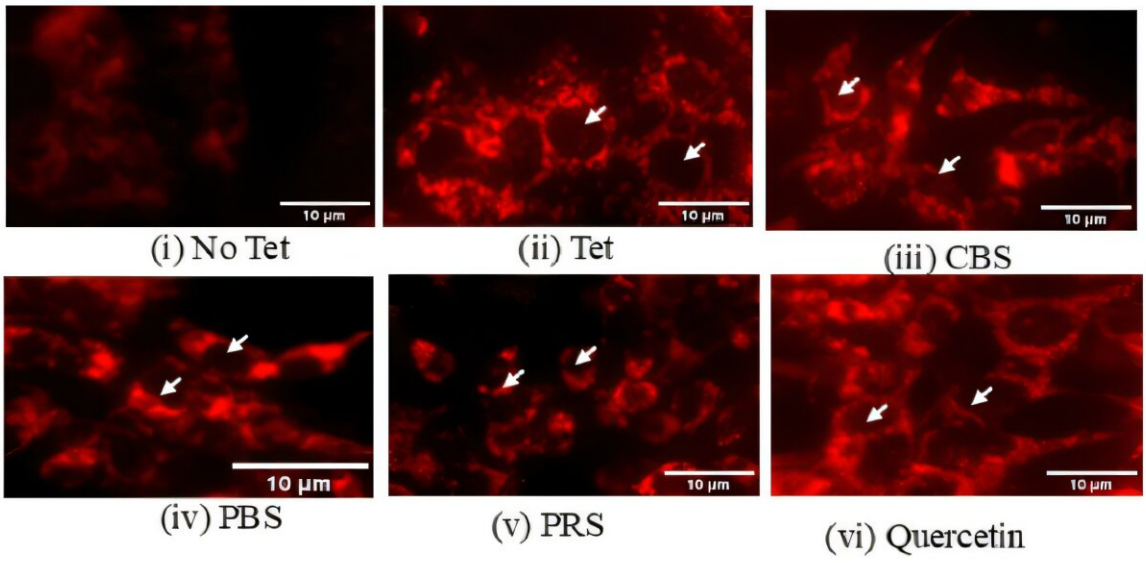
Multiple hits under the microscope

Now that the sticky amyloid clumps were under control, the scientists wanted to see how real nerve cells would respond. They used a special lab model with human brain-like cells engineered to produce the problematic amyloid-beta protein, mimicking what happens in Alzheimer's. These cells often struggled after being bombarded with the

amyloid toxin.

But when the scientists exposed them to the sorghum extracts, a striking transformation took place: The cells grew considerably healthier. The sorghum treatment increased their survival rate by more than 70%. Even cooler, the little "power plants" of the cells, called mitochondria, which make energy, returned to normal. They were about 80% more active and energetic (as measured by ATP). This meant the sorghum extracts helped "recharge" the cells' ability to make energy, a process that typically breaks down in the presence of Alzheimer's proteins.

At the same time, signs of cellular damage from "rusting" (known as oxidative stress) fell sharply. The compounds in the sorghum effectively reduced the harmful "free radical" signals and enhanced the cells' natural defense mechanisms, such as their built-in antioxidant enzymes. All signs of cellular distress were essentially reversed to healthy levels by the sorghum treatment.



Neuroprotective effects of sorghum polyphenol extracts on amyloid beta

(Aβ)-induced neurotoxicity. Representative live images (20× objective); white arrows indicate cell bodies. Credit: *Nutrients* (2026). DOI: 10.3390/nu18132121

To understand how this was happening, the research team also explored the genetic activity of the cells. The sorghum extracts, they found, mounted a coordinated defense. They turned down signals associated with inflammation and a particular type of cell death linked to iron, while boosting genes that offer protection. The sorghum polyphenols appeared to "turn down" inflammatory stress and protect against an iron-dependent process of cell death, the researchers said.

This ability to fight many problems at once is common among many plant-based antioxidants. Molecules in sorghum are joining forces with some dietary compounds found in olive oil, berries and spices that can simultaneously combat several key features of Alzheimer's disease.

From dish to brain: Real-world prospects

It's tempting to start believing sorghum is a cure in disguise, but caution is needed. Remember—these findings are all from cells in a dish. The human brain is far more complex, with barriers to absorption and hundreds of interacting cell types.

The researchers themselves note this is "an important early step" and not a treatment. In their words, the data "support further evaluation of sorghum-derived polyphenols as complementary therapeutic candidates for AD, with in vivo studies required to establish efficacy." The effects must now be tested in animals (and eventually people) to see whether eating or supplementing with sorghum polyphenols truly helps.

If future studies confirm the benefits, the implications are exciting.

Breeders might select sorghum varieties with especially high neuroprotective polyphenols, and food scientists could develop functional snacks or supplements. But for now, no one should jump to health claims—it's far too soon.

The key takeaway is this: Common foods can hide surprising chemistry. A humble grain like sorghum unexpectedly packed a powerful punch against multiple Alzheimer's "villains" in lab tests. This work reminds us that everyday diet components may one day join the toolkit for brain resilience—but only after careful animal and human studies prove the concept.

More information: Rasheed A. Abdulraheem et al, Neuroprotective Effects of Sorghum Polyphenol in Alzheimer's Disease: In Vitro and In Silico Analyses, *Nutrients* (2026). DOI: 10.3390/nu18132121

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