



New Cooking Method Makes Broccoli Healthier—But Beware!

Description

In recent years, broccoli has emerged as a highly esteemed vegetable, largely attributed to its considerable concentrations of sulforaphane, a compound renowned for its health benefits.

This compound has been linked to improved blood sugar regulation, and its potential anti-cancer properties have fueled interest in [broccoli supplements](#) that have gained popularity.

Nevertheless, [previous research](#) indicates that consuming the whole vegetable yields greater amounts of sulforaphane compared to supplements. This prompted a team of Chinese researchers to investigate optimal cooking methods for broccoli.

Their findings, published in the *Journal of Agricultural and Food Chemistry* in 2018, established a definitive preparation method—though it may demand a significant time investment.

The rationale is intricate: sulforaphane is not immediately available in the florets; rather, it exists as glucosinolates. Coupled with the enzyme [myrosinase](#), which serves as a natural defense against herbivores, these glucosinolates convert into sulforaphane during 'myrosinase activity.' To activate this process, the broccoli must be physically damaged.

However, conventional cooking methods like boiling and microwaving have been shown to drastically diminish glucosinolate levels—even minor exposure significantly impacts myrosinase's efficacy, which is notably sensitive to heat.

The researchers then explored the implications of stir-frying, a prevalent cooking technique in China. They noted a dearth of studies on sulforaphane concentrations in stir-fried broccoli, prompting a comprehensive analysis.

After procuring fresh broccoli, they finely chopped it to augment myrosinase activity and divided it into three groups: one raw, one stir-fried immediately after chopping, and one allowed to rest for 90 minutes before stir-frying. Their findings revealed that allowing the chopped broccoli to rest significantly enhanced sulforaphane concentrations, suggesting a waiting period could prove beneficial. They proposed that even a 30-minute interval could yield positive results.

While the prospect of lengthy preparation may be off-putting, the research team is seeking methods to simplify the process—until then, opting for raw broccoli remains a sound choice.

The findings were published in the [Journal of Agricultural and Food Chemistry](#).

An earlier version of this article was published in February 2018.



Vocabulary List:

1. **Sulforaphane** /sʌl'fɔ:rəfeɪn/ (noun): A compound found in broccoli known for its health benefits particularly its anti-cancer properties.
2. **Glucosinolates** /glu:'kəʊsɪnə,leɪts/ (noun): Natural compounds in cruciferous vegetables that can convert into sulforaphane.
3. **Myrosinase** /maɪ'rɔ:sɪneɪs/ (noun): An enzyme that helps convert glucosinolates into sulforaphane.
4. **Diminish** /dɪ'mɪnɪʃ/ (verb): To make or become less.
5. **Prevalent** /'prɛvələnt/ (adjective): Widespread in a particular area at a particular time.
6. **Augment** /ɔ:g'mɛnt/ (verb): To make something greater by adding to it.

Comprehension Questions

Multiple Choice

1. What is sulforaphane known for?
Option: Reducing blood pressure
Option: Increasing cholesterol levels
Option: Improving blood sugar regulation
Option: Enhancing muscle growth
2. Why did researchers investigate optimal cooking methods for broccoli?
Option: To enhance its taste
Option: To reduce its cooking time
Option: To increase myrosinase activity
Option: To study its color changes
3. Which conventional cooking methods have been shown to diminish glucosinolate levels in broccoli?
Option: Baking and grilling
Option: Stir-frying and sautéing
Option: Boiling and microwaving
Option: Steaming and roasting
4. What did the researchers find regarding sulforaphane concentrations in stir-fried broccoli?
Option: Stir-frying decreased sulforaphane levels
Option: Sulforaphane levels were highest in raw broccoli



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- Option: Stir-frying immediately after chopping was most effective
Option: Allowing chopped broccoli to rest enhanced sulforaphane concentrations

5. Why is myrosinase sensitive to heat?

- Option: To activate sulforaphane production
Option: To deactivate glucosinolates
Option: To prevent enzyme denaturation
Option: To increase vitamin content

6. What is the main benefit of opting for raw broccoli according to the research team?

- Option: Enhanced flavor
Option: Reduced preparation time
Option: Maximized sulforaphane content
Option: Improved texture

True-False

7. Sulforaphane is immediately available in broccoli florets.
8. Myrosinase activity is crucial for converting glucosinolates into sulforaphane.
9. Boiling and microwaving broccoli can increase glucosinolate levels.
10. Allowing chopped broccoli to rest before stir-frying enhances sulforaphane concentrations.
11. The research team provided a definitive solution to simplify the broccoli preparation process.
12. Stir-frying immediately after chopping broccoli had a negative impact on sulforaphane concentrations.

Gap-Fill

14. According to the research findings, even a _____ interval could yield positive results.
15. The enzyme _____ is responsible for converting glucosinolates into sulforaphane.
16. The optimal cooking method for preserving sulforaphane in broccoli involves _____.
17. The sulforaphane content is highest in _____ broccoli according to the research.



18. The research was published in the Journal of Agricultural and Food Chemistry in _____

Answer

Multiple Choice: 1. Improving blood sugar regulation 2. To increase myrosinase activity 3. Boiling and microwaving 4. Allowing chopped broccoli to rest enhanced sulforaphane concentrations 5. To prevent enzyme denaturation 6. Maximized sulforaphane content

True-False: 7. False 8. True 9. False 10. True 11. False 12. False

Gap-Fill: 14. 30-minute 15. myrosinase 16. stir-frying 17. raw 18. 2018

Vocabulary quizzes

Multiple Choice (Select the Correct answer for each question.)

1. Which term relates to the atmosphere or mood of a place?
Option: Regrowth
Option: Ambiance
Option: Hazards
Option: Coping
2. Which term describes the value of food in providing nourishment?
Option: Biodegradable
Option: Mitigate
Option: Nutritional
Option: Exacerbate
3. Which term refers to traits or conditions passed down from ancestors?
Option: Sulforaphane
Option: Hereditary
Option: Proliferation
Option: Compelling
4. Which term is used to describe the ability to produce a desired effect?
Option: Efficacy
Option: Governance
Option: Augment
Option: Cognitive



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5. Which term means to have a mutual relationship or connection?
- Option: Correlate
 - Option: Proliferate
 - Option: Indulgence
 - Option: Prominent
6. Which term is an enzyme responsible for the breakdown of glucosinolates into bioactive compounds?
- Option: Adverse
 - Option: Myrosinase
 - Option: Diminish
 - Option: Meticulous
7. Which term describes the act of enjoying pleasure or luxury?
- Option: Mitigate
 - Option: Indulgence
 - Option: Compelling
 - Option: Hazards
8. Which term means important famous or noticeable?
- Option: Prominent
 - Option: Contend
 - Option: Regrowth
 - Option: Hazards
9. Which term means to make less severe serious or painful?
- Option: Mitigate
 - Option: Biodegradable
 - Option: Coping
 - Option: Compelling
10. Which term refers to dangers or risks?
- Option: Hereditary
 - Option: Hazards
 - Option: Sulforaphane
 - Option: Correlate

Gap-Fill (Fill in the blanks with the correct word from the vocabulary list.)

11. _____ of misinformation on social media is a growing concern.
12. The speaker made a _____ argument for implementing the new policy.



13. Proper care and nutrition can help promote the _____ of damaged hair.
14. Regular exercise has been shown to improve _____ functions.
15. Using _____ materials can reduce environmental impact.
16. Broccoli contains _____ a compound with potential health benefits.
17. Effective _____ is crucial for maintaining organizational structure.
18. The effects of the medication are expected to _____ over time.
19. Adding fresh herbs can _____ the flavor of the dish.
20. Businesses need to _____ with challenges to stay competitive.

Matching Sentences (Match each definition to the correct word from the vocabulary list.)

21. Ignoring the issue could potentially worsen the situation.
22. Finding healthy ways to deal with stress is essential for mental well-being.
23. The medication may cause unintended negative effects.
24. She approached the task with great attention to detail.
25. The species began to rapidly increase in number.
26. The evidence presented was convincing and engaging.
27. A group of companies collaborated to fund the research project.
28. The disease is widespread in the region.
29. The study aimed to measure the effectiveness of the new treatment.
30. Workers were trained to identify and avoid potential dangers.

Answer

Multiple Choice: 1. Ambiance 2. Nutritional 3. Hereditary 4. Efficacy 5. Correlate 6. Myrosinase 7. Indulgence 8. Prominent



9. Mitigate 10. Hazards

Gap-Fill: 11. Proliferation 12. Compelling 13. Regrowth 14. Cognitive 15. Biodegradable 16. Sulforaphane
17. Governance 18. Diminish 19. Augment 20. Contend

Matching sentence: 1. Exacerbate 2. Coping 3. Adverse 4. Meticulous 5. Proliferate 6. Compelling 7.
Consortium 8. Prevalent 9. Efficacy 10. Hazards

CATEGORY

1. Sci/Tech - LEVEL5

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