

Powerful Sugar Gel Stimulates Remarkable Regrowth

Description

Earlier this year, researchers made a significant discovery regarding a potential treatment for hereditary-patterned baldness, the most prevalent form of hair loss affecting both men and women globally. This investigation commenced with an exploration of a naturally occurring sugar within the body that aids in DNA formation, known as '[deoxyribose](#)'.

In their pursuit to understand how these sugars facilitate [wound healing in murine models](#), scientists from the University of Sheffield and COMSATS University in Pakistan observed an accelerated regrowth of fur around injured areas compared to untreated counterparts.

Intrigued by these findings, the research team sought to delve deeper.

In a study released in June, male mice subjected to testosterone-induced hair loss had their back fur removed. Each day, the researchers applied a small quantity of deoxyribose sugar gel to the exposed skin, resulting in remarkable fur regrowth characterized by long and thick individual hairs within weeks.

The efficacy of the deoxyribose gel was noteworthy, as it matched the performance of minoxidil, a widely utilized topical treatment for hair loss branded as Rogaine.

Sheila MacNeil, a tissue engineer at the University of Sheffield, remarked, "Our findings suggest that enhancing blood supply to hair follicles using deoxyribose sugar could prove effective in stimulating hair growth."

Hereditary-patterned baldness, or [androgenic alopecia](#), is primarily dictated by genetics, hormonal fluctuations, and aging, with varying presentations in different genders.

This condition affects [up to 40 percent of individuals](#), and yet the U.S. Food and Drug Administration (FDA) has sanctioned only two treatments for this persistent issue.

Though minoxidil is available over-the-counter and can effectively decelerate hair loss and promote limited regrowth, it is not universally beneficial. For those who find minoxidil ineffective, an alternative is finasteride (Propecia), a prescription medication that aids in maintaining testosterone levels, albeit not yet approved for women.

Finasteride has shown to slow hair loss in approximately [80 to 90 percent of male patients](#), although it requires consistent use and may be associated with significant [adverse effects](#), including erectile dysfunction and mood alterations.

"Addressing androgenetic alopecia remains a formidable challenge," MacNeil and her research colleague Muhammad Anjum from COMSATS articulated in their published article.

The collaboration yielded a biodegradable, non-toxic gel composed of deoxyribose, which was systematically applied to rodent subjects modeling male-pattern baldness.

Comparative assessments included minoxidil and a combination treatment of the sugar gel and minoxidil; results demonstrated that deoxyribose significantly stimulated the emergence of new hair follicles.

Both treatments facilitated an 80 to 90 percent regrowth rate among the mice, although the combined therapy did not yield substantially improved outcomes.

Throughout the 20-day experiment, photographs chronically documented the pronounced effects.

Deoxyribose Gel

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Chronicles of mice with male-pattern baldness across various treatment intervals. ([Anjum et al., Front. Pharmacol., 2024](#)).

While the precise mechanisms behind the deoxyribose gel's promotion of more robust hair growth remain unclear, researchers observed a proliferation of both blood vessels and skin cells around the application sites.

"A more efficient blood supply to the hair bulb correlates with increased follicle size and enhanced hair growth," the researchers stated.

Hair Shaft Thickness

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Comparative analysis of hair shaft thickness across treatment cohorts. ([Anjum et al., *Front. Pharmacol.*, 2024](#)).



If the efficacy of the deoxyribose gel is confirmed in human studies, it could pave the way for innovative treatments for alopecia, as well as rebirth of hair, eyelashes, and eyebrows post-chemotherapy.

The authors advocate for further exploration, noting, "This domain remains woefully underexplored, necessitating novel approaches."

The current trials were confined to male subjects, yet future studies may investigate the potential application of these natural sugars for treating female models facing testosterone-induced alopecia.

MacNeil concluded, "Our research is in its infancy, yet the promising results underscore the need for comprehensive study."

The findings were published in [Frontiers in Pharmacology](#).

Note: An earlier iteration of this article originally appeared in July 2024.

Vocabulary List:

1. **Hereditary** /hə'red.i.tɪr.i/ (adjective): Related to or determined by genetics or inheritance.
2. **Regrowth** /,ri:'grəʊθ/ (noun): The process of growing back again particularly pertaining to hair plants etc.
3. **Efficacy** /'ɛfɪkəsi/ (noun): The ability to produce a desired or intended result.
4. **Adverse** /'æd.vɜ:rs/ (adjective): Preventing success or development; harmful or unfavorable.
5. **Biodegradable** /,baɪ.əʊ.dɪ'greɪ.də.bəl/ (adjective): Capable of being broken down by natural biological processes.
6. **Proliferation** /prə,lɪf.ə'reɪ.jən/ (noun): Rapid increase in numbers; a rapid and often excessive spread or multiplication.

Comprehension Questions

Multiple Choice

1. What was the significant discovery made by researchers earlier this year regarding a potential treatment for hereditary-patterned baldness?

- Option: a. Deoxyribose sugar gel
Option: b. Minoxidil
Option: c. Finasteride
Option: d. Rogaine



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2. What is the primarily genetic factor behind hereditary-patterned baldness?
- Option: a. Hormonal fluctuations
 - Option: b. Aging
 - Option: c. Deoxyribose sugar
 - Option: d. Gender differences
3. What was the outcome of applying deoxyribose sugar gel to male mice with testosterone-induced hair loss?
- Option: a. Stimulated regrowth of hair follicles
 - Option: b. Decreased blood supply to hair follicles
 - Option: c. Caused adverse effects
 - Option: d. No significant change in hair growth
4. What did the researchers observe around the application sites of the deoxyribose gel?
- Option: a. Increased skin cell proliferation
 - Option: b. Hair loss
 - Option: c. Reduced blood vessels
 - Option: d. Unchanged follicle size
5. What was the main focus of the collaboration between MacNeil and Anjum regarding male-pattern baldness?
- Option: a. Hair thickness analysis
 - Option: b. Blood vessel formation
 - Option: c. New hair follicle emergence
 - Option: d. Male mice behavior study
6. What could the confirmation of deoxyribose gel efficacy lead to in terms of treatments?
- Option: a. Eyelash and eyebrow removal
 - Option: b. Decreased hair growth
 - Option: c. Innovative alopecia therapies
 - Option: d. Skin discoloration

True-False

7. Minoxidil is universally beneficial for all individuals with hereditary-patterned baldness.
8. Finasteride has been approved for use in women for hair loss treatment.



9. The collaboration between MacNeil and Anjum included a study on female-pattern baldness.
10. The deoxyribose gel application led to a decline in hair follicle size in mice.
11. The confirmation of deoxyribose gel efficacy could impact chemotherapy-induced hair regrowth.
12. The research on deoxyribose sugar for hair regrowth is considered comprehensive according to MacNeil.

Gap-Fill

13. Deoxyribose significantly stimulated the emergence of new hair follicles in male mice subjected to testosterone-induced hair loss within _____ weeks.
14. Up to _____ percent of individuals are affected by hereditary-patterned baldness.
15. The combined therapy of minoxidil and deoxyribose gel did not yield substantially improved _____.
16. The domain of exploring natural sugars for androgenetic alopecia treatment remains _____ underexplored, according to the authors.
17. The current trials focused on male subjects, while future studies may examine the application of natural sugars for treating female models with testosterone-induced _____.
18. The collaboration between MacNeil and Anjum yielded a biodegradable, non-toxic gel composed of _____.

Answer

Multiple Choice: 1. a. Deoxyribose sugar gel 2. b. Aging 3. a. Stimulated regrowth of hair follicles
4. a. Increased skin cell proliferation 5. c. New hair follicle emergence 6. c. Innovative alopecia therapies
True-False: 7. False 8. False 9. False 10. False 11. True 12. False
Gap-Fill: 13. weeks 14. 40 15. outcomes 16. woefully 17. alopecia 18. deoxyribose



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
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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