Natural Hormone May Reverse Obesity by Acting on Brain

Description

A hormone found to reverse obesity in mice has revealed important insights into how the brain regulates body weight. Researchers at the University of Oklahoma studied fibroblast growth factor 21 (FGF21) and discovered that it affects a crucial brain area involved in appetite and metabolism. This area is also influenced by popular weight-loss medications known as GLP-1 drugs. Their research was published in the journal *Cell Reports*.

Unlike other metabolic signals that target organs like the liver, FGF21 primarily operates through the brain. There is increasing interest in FGF21, particularly as drugs that target its pathway are being developed for treating metabolic dysfunction-associated steatohepatitis (MASH), a severe liver condition linked to obesity and insulin resistance.

The study, led by Dr. Matthew Potthoff, identified the hindbrain as the main site where FGF21 acts. This region is vital for managing essential functions such as hunger, energy balance, and nausea. Potthoff noted that previous research showed FGF21 signals the brain instead of the liver, but the specific brain area was unknown until now. Surprisingly, it appears that the hormone communicates with the hindbrain rather than the hypothalamus, where other body weight regulators are thought to act.

FGF21 specifically targets areas in the hindbrain called the nucleus of the solitary tract and the area postrema. This pathway is essential for FGF21 to exert its effects on metabolism and weight loss.

Potthoff hopes this research will lead to targeted therapies for obesity and MASH that minimise side effects commonly associated with FGF21 analogs, such as gastrointestinal issues. He emphasised the need for further studies to confirm if this brain circuit can help reverse MASH as well.

Vocabulary List:

1. **hormone** /ˈhɔɹmoʊn/ (noun): a chemical made by the body to control activity
2. **reverse** /rɪˈvɝs/ (verb): make something return to an earlier state
3. **regulates** /ˈrɛgjəˌleɪts/ (verb): control how something works or happens
4. **metabolism** /məˈtæbəlɪzəm/ (noun): the chemical processes in a living body
5. **pathway** /ˈpæθˌweɪ/ (noun): a route or series of steps something follows
6. **hindbrain** /ˈhaɪndˌbreɪn/ (noun): the lower back part of the brain

Comprehension Questions

Multiple Choice

1. What hormone is studied for its role in reversing obesity in mice?

   Option: GLP-1
   Option: FGF21
   Option: Insulin
   Option: Leptin

2. Which journal published the research on FGF21?

   Option: Nature
   Option: Cell Reports
   Option: The Lancet
   Option: Science

3. What condition is associated with metabolic dysfunction that researchers are targeting with drugs related to FGF21?

   Option: Type 2 diabetes
   Option: Hypertension
   Option: MASH
   Option: Hyperthyroidism

4. Who led the study on FGF21 at the University of Oklahoma?

   Option: Dr. John Smith
   Option: Dr. Matthew Potthoff
   Option: Dr. Sarah Johnson
   Option: Dr. Emily Davis

5. Which part of the brain was identified as the main site where FGF21 acts?

   Option: Cerebral cortex
   Option: Hindbrain
   Option: Hypothalamus
   Option: Amygdala

6. What does FGF21 primarily operate through?

   Option: The liver
   Option: The pancreas
   Option: The brain
   Option: The intestines

True-False

7. FGF21 primarily signals the liver to regulate body weight.

8. Dr. Matthew Potthoff was involved in the study of FGF21 conducted at the University of Oklahoma.

9. The nucleus of the solitary tract is a part of the hindbrain affected by FGF21.

10. GLP-1 drugs target the same pathway as FGF21.

11. The hypothalamus is the specific brain area where FGF21 communicates.

12. FGF21 analogs are linked to severe gastrointestinal issues.

Gap-Fill

13. The hormone FGF21 was found to affect the brain area involved in appetite and metabolism, specifically targeting the _____ area.

14. MASH stands for metabolic dysfunction-associated _____ hepatitis.

15. Dr. Potthoff's research hopes to lead to therapies that minimize gastrointestinal _____ associated with FGF21.

16. The brain region specifically targeted by FGF21 includes the nucleus of the solitary tract and the area _____ .

17. Unlike other metabolic signals that primarily target the liver, FGF21 primarily operates through the _____ .

18. Further studies are needed to confirm if FGF21 can help reverse _____ as well.

Answer

Multiple Choice: 1. FGF21 2. Cell Reports 3. MASH 4. Dr. Matthew Potthoff 5. Hindbrain 6. The brain
True-False: 7. False

8. True 9. True 10. True 11. False 12. True
Gap-Fill: 13. hindbrain 14. steatohepatitis 15. issues 16. postrema 17. brain 18. MASH

CATEGORY

1. Health - LEVEL5

POST TAG

1. brain
2. ESL learning
3. esl news
4. hormone
5. Level 5
6. obesity

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