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Role of Glucose in Regulating Liver Functions

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Why in News

A study by researchers from the Tata Institute of Fundamental Research, Mumbai (TIFR) has revealed that **glucose in the body controls the function of SIRT1 directly.**

- SIRT1 is an **enzyme** that **deacetylates (removal of acetyl) proteins** that contribute to cellular regulation (reaction to stressors, longevity).
A **shortage or absence of the control by glucose** may lead to a **diabetic-like state**, while **excess feeding and sustained low levels** of SIRT1 can lead to **obesity and enhanced ageing.**
- This study paves the way might be beneficial in **tackling lifestyle disorders and ageing-related diseases.**

Key Points

- In normal healthy individuals, SIRT1 protein levels are known to **increase during fasting** and **decrease during the feed**, which is essential to maintain a balance between glucose and fat metabolism.
- The glucose controls the functions of a protein SIRT1 which in turn maintains everyday feed-fast cycles and is also associated with longevity.
The feed-fast cycle is a basic pattern and the metabolism-related to this is largely taken care of by the liver.
- Thus, the study shows that both **over-activation and under-activation of SIRT1 can lead to diseases.**
 - Glucose puts a check on the activity of SIRT1 in the fed state. In the absence of this check, SIRT1 activity increases and results in hyperglycemia in a fasted state, mimicking diabetic state.
 - The constant feeding or high-calorie intake that leads to a sustained reduction in the levels of SIRT1 (by glucose) is associated with ageing and obesity.

Source: TH