Bioactive Peptides

Source: PIB

A study finds that **bioactive peptides (BAPs)** from traditional fermented foods can deliver health benefits tailored to specific population groups, opening scope for personalized nutrition in India.

- **Bioactive Peptides (BAPs):** Bioactive peptides are **short chains of 2–20 amino acids** that remain active after digestion and directly affect body functions.
  - They are essentially **"hidden" or "encrypted"** within the larger structure of a **parent protein.**
    - They become **"activated" or "released"** when the parent protein is broken down by enzymes during digestion, fermentation, or other forms of processing.
  - BAPs interact with biomolecules via **electrostatic forces, hydrogen bonding, and hydrophobic interactions**, providing **antimicrobial, antihypertensive, antioxidant, and immune-modulatory effects**.
  - Peptides and proteins are both made up of amino acid chains linked by peptide bonds.
    - The key difference is that peptides are shorter chains, while proteins typically have more than 50 amino acids.
- **Health Benefits:** BAPs can regulate **blood pressure, blood sugar, immunity, inflammation**, and influence **cardiac and metabolic health**.
  - However, the **way biopeptides work varies from person to person** due to factors such as genetic makeup, gut microbiota, diet, and overall health.
    - This highlights the importance of **precision nutrition,** where diets and health plans are tailored to an individual's unique biology, **an approach particularly crucial in a diverse population like India.**

Amino Acids:

- Amino acids are organic compounds that act as the **building blocks of proteins, essential for growth, repair, and normal functioning of the body.** They are of three types:
  - **Essential amino acids,** which the body cannot produce and must be obtained from food (such as histidine, leucine, and lysine).
  - **Nonessential amino acids,** which the body can synthesize on its own (such as alanine, glutamic acid, and glycine).
  - **Conditionally essential amino acids** are usually not essential, except in times of illness and stress (eg: arginine, cysteine, and glutamine)

Read more: Chlorella Growth Factor

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