Artificial Sweeteners

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Why in News?

Recently, A new Brazilian study has found that people who consumed certain number of artificial sweeteners experienced 62 % decline in their ability.

- Artificial sweeteners are ***low-calorie sweeteners*** referred to as non-nutritive sweeteners.
- It is a chemicals used to sweeten foods and beverages.
- It found in many diet sodas, sugar-free gums, low-calorie desserts and various processed foods.
- **Common types –** Aspartame, Saccharin, Acesulfame-K, Sucralose, Neotame, Advantame, Erythritol, Xylitol, Sorbitol, Steviol Glycosides and tagatose.
- **Recent findings of the study –** It shows artificial sweeteners (ASs) may have negative health effects, including a **62%** faster cognitive decline in adults under 60.
- **Cognitive Decline –** A can of diet soda sweetened with aspartame, according to the World Health Organization (WHO) contains 200 to 300 milligrams.
- Even moderate intake (66 mg/day) led to 35% faster decline compared to low intake (20 mg/day).
- High intake linked to 62% faster global cognitive decline.
- Consumption equivalent to a **1.3–1.6-year increase** in brain age.
- **Aspartame** can increase levels of certain amino acids, such as phenylalanine and aspartic acid, in the brain.
- These compounds can interfere with the production of neurotransmitters like serotonin, dopamine and norepinephrine.
- This led to symptoms like headaches, migraines, anxiety, and sleep disturbances.
- **Gut Microbiota -** ASs can alter the composition of gut bacteria, leading to dysbiosis (imbalance), reduced production of helpful short-chain fatty acids, and increased risk of insulin resistance.
- **Glucose Control -** By interacting with taste receptors, ASs can activate glucose transporters, leading to altered glucose absorption and worsened glycemic control.
- **Cardiovascular Risk -** Studies have linked consumption of artificially sweetened beverages to increased risks of heart attack, stroke, and general mortality, similar to sugary drinks.
- ***Erythritol*** to accelerate clotting of blood, ***leading to cardiovascular risks.***
- **Disruption of blood-brain barrier –** Artificial sweeteners have been linked to

disruptions in the blood-brain barrier, a shield that prevents harmful substances from entering the brain.

- Weakening of this barrier can leave the brain vulnerable to damage, which may accelerate aging-related changes and increase risks for neurodegenerative diseases.
- **Neuroinflammation –** Sweeteners contribute to oxidative stress, which refers to an imbalance between harmful free radicals and the body's ability to detoxify them, which can damage brain cells.
- This, coupled with neuroinflammation an inflammatory response within the brain could impair brain function and promote cognitive decline over time.
- **Global status –** WHO had declared aspartame to be potentially carcinogenic in July 2023.
- The basis of risk assessment and Acceptable Daily Intake (ADI) established by Joint FAO/WHO Expert Committee on Food Additives (JECFA).
- The limits are in harmonization with Codex Alimentarius Commission.
- **Status in India –** Food Safety and Standards Authority of India (FSSAI) has laid down the standards for various artificial sweeteners in the Food Safety and Standards (Food Products Standards and Food Additives) Regulation, 2011.

Approved sweeteners in India are Aspartame, Acesulfame-k, Sucralose, Saccharin, Steviol glycosides.

Reference

[The Indian Express| Artificial Sweeteners]