

Love at first *scoop*



Picture the crack of a chip, the pop of popcorn, the pssst of soda... sounds that make snacking irresistible. Do you ever wonder how science turns simple ingredients into sensory explosions? **Shamit Sharma, AIS Naya Raipur, VIII A**, brings to you **part V** of GT's *Science Behind Snack* series, where every snack shall have its moment. Without further ado, let's dig in!

Snack: Ice cream

Science involved: Molecular gastronomy & Thermodynamics

Threat level: Extremely brain-freezing

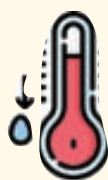
Power type



Once upon a smouldering summer, in an interview with the Genie, a heat flashed interviewer asked, "What's the most popular wish amongst people these days?" To which, the Genie replied, "More people wish for an unlimit-

ed free supply of ice-cream, when given some magic." And why not, dear readers? When it holds the reign over torturous summers, delivering a cool and silky mouthfeel that melts quickly on the tongue. This structural masterpiece called 'Colloid' where tiny air bubbles and ice crystals are suspended in sugary syrup, stands on the balance of three states of matter: Solid (ice), liquid (fat and syrup) and gas (air). This harmony is what gives ice cream its ultimate superpower.

Snack-ology



Ice cream is explained by food chemistry, thermodynamics, and food engineering. The way physics makes science magical is by creating a structure called coalescence - fat clustered together to trap air in ice cream. And with some biochemistry, stabilisers like guar gum,

agar agar, xanthan act as glue to keep the mixture together. Last but not the least, some rapid freezing incorporates air, giving it a light and smooth structure.

Lab behind the bite



The magic lies in Freezing Point Depression, i.e. partial freezing and ice crystal control to prevent ice from turning into solid. Fat globules from cream mix with sugar and proteins during high-speed churning, forming a stable foam. The texture depends on the ice crystals; if they are too big, the ice cream feels gritty and sandy. The ideal ice crystal size is 50 micrometres for that perfect scoopable texture.

But have you ever wondered if ice cream didn't melt at all? I bet this was one of the wishes that Genie fulfilled. Inventor Tomihisa Ota and her team at Kanazawa University created

Test it yourself

To see how air affects the snack, take two scoops of ice cream. Leave one out to melt and keep the other one in the freezer. If you re-freeze the one you left out, there will be a significant change in texture as the air bubbles have escaped.

an ice cream that doesn't melt at all, even if you use heat externally! Kanazawa Ice's no-melt ice cream doesn't use magic, but polyphenols derived from strawberries to make all the magic happen.

Well, why can't you stop slurping?



Ice cream creates a multi-sensory experience of vanishing calories and contrast of the hot and cold temperature. This transformation from a cold solid to hot liquid keeps the brain excited, releasing more endorphins. Humans naturally crave calorie-dense, cold treats because they provide quick energy. It's a sensory loop designed to keep the spoon moving until the tub is empty.

Rating: 🍦🍦🍦🍦

Pic: Ridhi Aggarwal, AIS Gurugram 46, X D

PATH-O-GEN-IUM

A Botanical And Medical Autopsy Of The Rise Of Congress Grass

Vartika Srivastava

AIS Gurugram 46, X E

Imagine a villain sailing through the oceans as a toxic passenger carrying with it a baggage full of worldly allergies. Introducing *Parthenium hysterophorus* L., which is better known to the nation as Congress grass for its invasive and aggressive nature.

Green & mean

Congress grass belongs to the Asteraceae family, the 'Regina George' of the plant world. Functioning as a biological thief, it rapidly depletes essential soil nutrients to starve out its agricultural arch-nemesis: profitable crops. By the power of prolific seed production and effortless wind dispersal, this noxious weed quickly dominates landscapes.

A ravaged crimson passage

It thrives effortlessly in warm, humid, subtropical climates. Through wind dispersion, millions of its microscopic pollen grains fly out. When inhaled, the pink lining of your trachea and bronchi can swell into a raw, angry crimson. It chokes your airways, as thick mucus floods the passages like rising sludge. Your chest tightens into the suffocating trap of asthma or chronic bronchitis.

The American export

By 1955, US wheat was flooding into India under the Public Law 480 (PL-480) programme, brought in to offset a grain shortage. International grain screening standards were vastly less stringent at the time, and Congress grass seed is barely 2mm long, easy to mistake for chaff, so the shipments arrived contami-

nated. Once the contaminated grain was unloaded and distributed nationwide, the invasion was officially locked and loaded. The weed's first Indian sighting, near Pune, Maharashtra, was documented by botanist M B Rao.

To this day, humanity remains without a definitive solution to the cascading catastrophes unleashed by this toxic invader. It is able to produce up to 25,000 seeds per plant because the weed has no natural predators in Asia. It quickly colonised railway tracks, roadsides, and agricultural fields across the sub-continent. It is an undefeated biological thief that continues to choke our lands and weaponise the very air we breathe, cementing its status as one of the most economically damaging ecological invasions in Indian history.

