A RARE SUGAR FOR INDIAN FOOD MAKERS

The fourth generation of sugar reduction.

Sweeteners copy sugar's taste. Polyols copy its bulk. D-allulose is a sugar by chemistry, so it does sucrose's jobs in the recipe: bulk, browning, moisture and freeze control. One ingredient where a "no added sugar" formula usually needs three.

90%

Less energy than sugar, gram for gram. 0.4 kcal/g against 4.0. The energy on your panel comes from your key ingredients, not the sweetener.

70%	1:1	0.4	≥98.5%	36 mo
Sweetness of sucrose	Replaces sugar by weight	kcal/g, US labelling value	Purity, dry basis	Shelf life, sealed

FSSAI APPROVED 43/STD/PA/FSSAI/2025 · US GRAS · FSANZ · CHINA NHC · JAPAN · SOUTH KOREA

01 · FOUR GENERATIONS, SCORED ON SUGAR'S JOBS

Only one generation is itself a sugar.

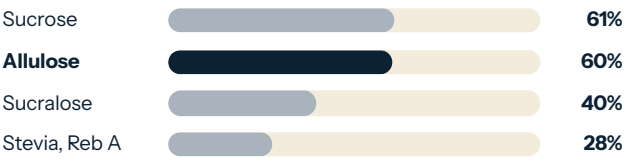
JOB IN THE RECIPE	SYNTHETIC sucralose	POLYOLS maltitol	PLANT EXTRACTS stevia, Reb A	RARE SUGARS Sucroless™ allulose
Lower energy Reference: sucrose 4.0 kcal/g	● **≈0** At use level	● **2.1 kcal/g** About half of sugar	● **≈0** At use level	● **0.4 kcal/g** 90% less than sugar
Bulk, 1:1 by weight Bakery, bars, mithai, jams	● **None** Needs a filler	● **1:1** Drop-in solids	● **None** Needs a filler	● **1:1** Drop-in solids
Browning Crusts, peda, biscuits, sauces	● **None** Pale bake	● **None** Pale bake	● **None** Pale bake	● **Fast** Reducing sugar, full Maillard
Soft from the freezer Ice cream, kulfi, frozen yoghurt	● **None** No solids	● **1.0×** Same as sugar	● **None** No solids	● **1.9×** Freezing-point effect per gram
No cooling effect Chocolate, fillings, powders	● **None**	● **Slight**	● **None**	● **None** Sugar-like on the tongue
Stays dissolved g per 100 g water, 25 °C	● **n/a** Used at trace levels	● **≈175 g** Sucrose ≈200 g	● **n/a** Used at trace levels	● **291 g** Resists crystallising
Clean finish Every category	● **Lingers** Aftertaste reported	● **Clean**	● **Bitter linger**	● **Clean** Liked as much as sucrose
Sweetness Against sucrose	● **≈600×** Needs bulk alongside	● **≈90%**	● **200 to 300×** Needs bulk alongside	● **70%** Trace top-up at full swap

● Matches or beats sugar ● Partly, or needs a partner ingredient ● Falls short

02 · TASTE PEER-REVIEWED

In a 100-person test, allulose sold like sugar.

Vanilla Greek yoghurt, every sample at equal sweetness. Share likely or very likely to buy, before the sweetener was named.



Mora et al., Foods 11, 3718 (2022). Top two boxes, five-point scale.

03 · CONSISTENCY

$C_6H_{12}O_6$

One molecule. No blend to drift.

Stevia is a family of glycosides. Reb A, D and M each taste different, so the ingredient tastes of its mix. Allulose is one defined molecule, the C-3 epimer of fructose, at 98.5% purity or better.

Each lot ships with its own Certificate of Analysis.

04 · ON THE LINE

Four problems from the factory floor.

A Reduced-sugar kulfi sets like a brick at −18 °C.

Freezing point falls with the number of dissolved molecules, not their weight. Allulose (180 g/mol) puts about 1.9 times as many molecules into the mix as the same weight of sucrose (342 g/mol).

Expect: a softer, scoopable set. If it runs too soft, trim total solids before adding stabiliser.

B Peda and biscuits come out pale when the sugar comes down.

Allulose is a reducing sugar. It joins Maillard browning directly, while sucrose must break down first.

Expect: colour at a lower oven or khoya temperature. Drop the oven 10 to 15 °C and check colour early.

C Packaged buns stale and grow mould before their date.

In a 7-day trial, allulose buns kept a softer crumb, more moisture and lower water activity than sucrose buns, with less mould. PEER-REVIEWED

Expect: slower staling. Keep 5 to 10% of the sugar fermentable, because yeast cannot use allulose.

D Reduced-sugar bars lean on maltitol for bulk.

Allulose supplies the bulk and binds in the syrup phase as sugar does. It browns where a polyol stays pale, with no cooling note.

Expect: a small high-intensity top-up for sweetness. It is hygroscopic, so check hardness over shelf life.

05 · STARTING POINTS SUPPLIER GUIDANCE

CATEGORY	START HERE	WATCH
Ice cream, kulfi	5% of mix for 25% less sugar	A full swap runs soft. Rebalance solids.
Cakes, muffins	Gram for gram. Oven 10 to 15 °C lower.	Browns sooner than sucrose.
Breads, buns	Keep 5 to 10% of sugar as sucrose or dextrose.	Without it the proof slows.
Mithai	Fold in off the heat, or keep syrup below 110 °C.	Long, hot boils darken it.
Dark chocolate	Replace up to 25% of total sugars first.	Control humidity in the conche.
Jams	Hold total soluble solids at your target.	Low solids weaken an HM-pectin set.
Drinks, premixes	3.5% of the drink.	Run a storage trial at low pH.

Hexicose application guidance. Confirm on your own line before you scale.

06 · SPECIFICATION

IDENTITY	
CAS · formula	**551-68-8 · $C_6H_{12}O_6$**
Molecular weight	**180.16 g/mol**
Particle size	**20 to 80 mesh**
PER LOT, ON THE COA	
Assay, dry basis	**≥ 98.5%**
Loss on drying	**≤ 1.0%**
Ash	**≤ 0.1%**
Lead · total arsenic	**≤ 0.5 · ≤ 0.5 ppm**
Total plate count	**≤ 300 CFU/g**
Yeast and moulds	**≤ 50 CFU/g**

Allergen-free and gluten-free. Non-GMO per manufacturer declaration. Full methods in the TDS.

25 kg
Food-grade bags, palletised

15 to 25 °C
40 to 50% RH. Keep sealed, out of sunlight.

36 months
From manufacture, sealed

CoA per lot
Batch, manufacture and expiry dates on every bag

NEXT STEP · FOR LICENSED FBOS

Request a 1 kg R&D sample.

Send your category and target sugar reduction. Your R&D team receives the sample, the lot CoA and a starting formulation. TDS, MSDS and FSSAI approval letter on request.

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PR Mora M.R. et al. (2022). Consumers respond positively to the sensory, health, and sustainability benefits of the rare sugar allulose in yogurt formulations. Foods 11(22), 3718.

PR Wittland S. et al. (2025). Allulose as novel ingredient for improving freshness of yeast-made bakery products. LWT 216.

PR Fukada K. et al. (2010). Crystal structure, solubility and mutarotation of D-psicose. Bull. Chem. Soc. Jpn. 83(10), 1193.

PR Sawettanun S., Ogawa M. (2022). D-allulose and the fermentation ability of baker's yeast. Int. J. Food Sci. Technol. 57(9), 6004.

REG US FDA (2020). Declaration of allulose and calories from allulose on Nutrition and Supplement Facts labels. Guidance for Industry.

CALC Freezing-point effect: 342.30 ÷ 180.16 = 1.9. Energy: (4.0 − 0.4) ÷ 4.0 = 90% less. Comparator values are typical literature figures.

Hexicose Foods makes no health or therapeutic claim for D-allulose. Claims on finished products are the manufacturer's own and must meet FSSAI rules. Not for retail sale or direct consumption. Confirm suitability in your own formulation.