Allusweet

INTRODUCTION

- Allusweet is a natural low-calorie sweetener launched by INGIA, with the main ingredient being D-Allulose (content ≥ 98%).
- D-Allulose is a rare sugar naturally occurring in nature, with approximately 70% relative sweetness to sucrose. It possesses functions such as antioxidant properties and the ability to inhibit the rise in blood sugar levels.
- INGIABIO utilizes fructose, a natural raw material found in abundance in nature, to prepare D-Allulose by enzymatic reaction using bio-enzymes as catalysts in line with today's green production principles.

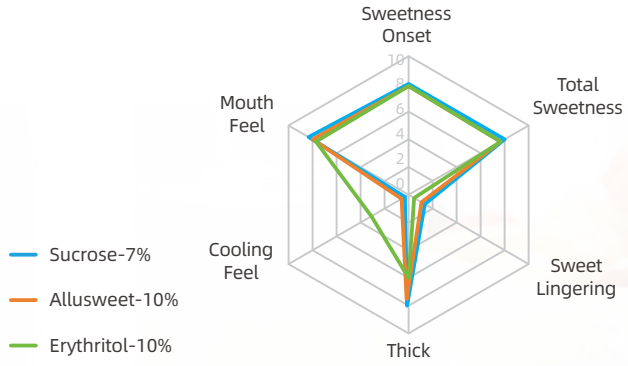
ADVANTAGE

High solubility | **Maillard reaction** | **Low calorie** | **Great mouthfeel** | **Clean label**

Compared to other bulks weeteners, Allusweet is closer to sucrose, such as Maillard reaction and hygroscopicity. This makes Allusweet a better performance when applied to bakery products.

Property	Sucrose	Allusweet	Erythritol
Sweetness	1	0.7	0.7
Calories, Kcal/g	4	0.2	0.24
Solubility, % (25℃)	210	291	35
Melting point ℃	186	96	120
Moisture absorption	High	High	Low
Maillard reaction	Yes	Yes, much more than sugar in browning	NO
Human tolerance dose, g/day	——	~50-55	~35-40

Comparison of the taste of sucrose, erythritol, and Allusweet



In addition to replacing sucrose to provide sweetness and reduce calories, D-Allulose has other excellent functions.

- (1) Not metabolize in the human body[1]
- (2) Does not impact blood sugar[2]
- (3) Regulate lipid metabolism[3]
- (4) Show antioxidant properties[4]

1. D-psicose, an epimer of D-fructose, favorably alters lipid metabolism in Sprague-Dawley rats. 2015

2. Inhibitory effect of D-psicose on glycemic responses after oral carbohydrate tolerance test in rats. 2006

3. Dietary D-psicose, a C-3 epimer of D-fructose, suppresses the activity of hepatic lipogenic enzymes in rats. 2015

4. Antioxidant properties of custard pudding dessert containing rare hexose, D-psicose. 2007

SENSORY TEST

From our formula and sensory labs, the excellent properties of Allusweet have been proven in applications.

BAKING APPLICATIONS

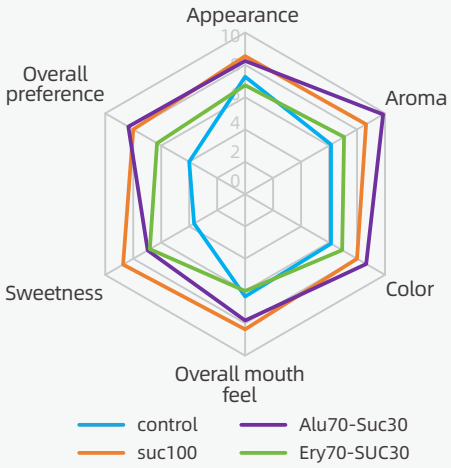
Maillard reaction: better color and flavor for baking

Compared to sugar alcohol sweeteners, Allusweet can react with proteins or amino acids, providing good color and flavor to baked products.

Comparison of the colour of erythritol bread (left) and Allusweet bread (right)

The presence of sucrose plays an important role in the swelling, colour, flavour and texture of the bread.The replacement of 70% sucrose by Allusweet had no significant effect on the shape of the bread and also resulted in a more attractive baking colour, a stronger baking aroma and caramel flavour in terms of odour, and was essentially the same as the sucrose loaf in terms of the overall taste scores and the overall liking of the loaf.

Sensory evaluation of the breads adding different sweeteners

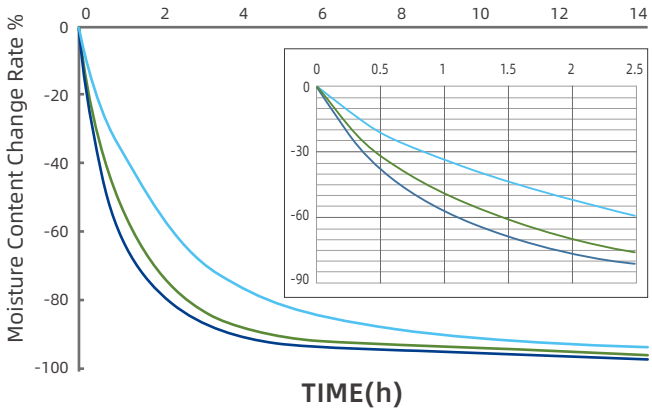


Better moisture retention - makes bakery products easier to store

Allusweet has good water retention, can delay the hardening of bread, cakes and other products, and is superior to sucrose products in terms of storage stability.

- Suc100
- Alu70-Suc30
- Ery70-Suc30

Changes in moisture content of cakes with different sweeteners added during storage

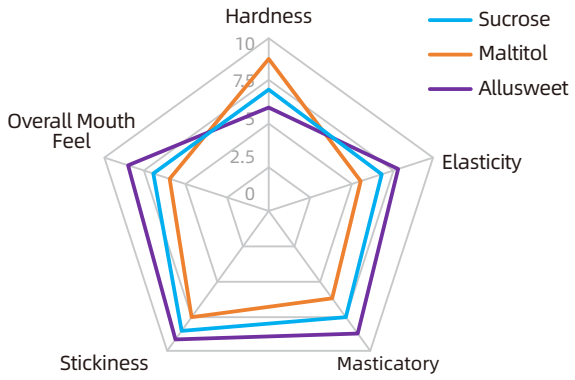


CONFECIONARY APPLICATIONS

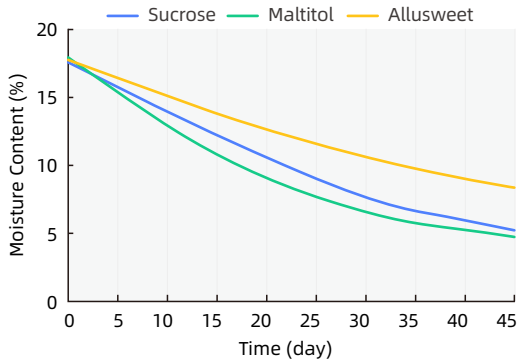
Improvement of texture and volume of fondant

Allusweet can be used as a food filler to bring volume and texture improvement. For example, the addition of Allusweet to gelatinized fudge resulted in improved gelatinization, increased water content, and higher elasticity of the fudge, as well as a product with low-calorie content and less change in texture during the storage period.

Comparison of the taste of soft candies with different added sweeteners



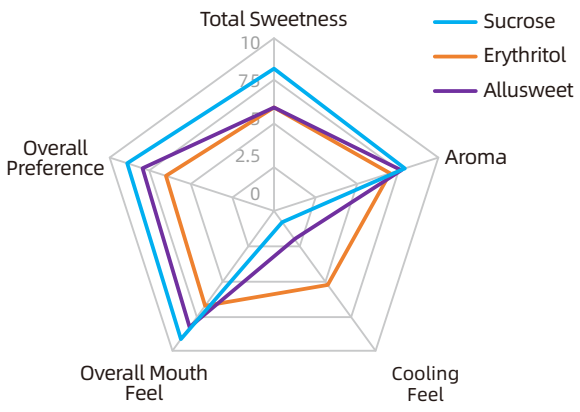
Changes in moisture content during accelerated destruction storage of soft candies with different sweeteners addition



More similar in texture to sucrose chocolate

Compared with erythritol, solid Allusweet brings a more palatable cooling sensation when it dissolves in the mouth, and chocolate made with solid Allusweet has a better overall taste compared with chocolate made with erythritol and is close to sucrose chocolate.

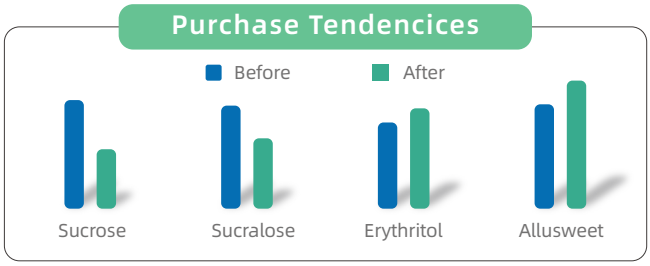
Comparison of sensory properties of chocolates added with different sweeteners



No impact on consumer purchasing tendencies

Consumer testing (both blind and informed) of milk beverages sweetened with different sweeteners (sucrose, sucralose, erythritol, Allusweet): in terms of preference and purchase intention, consumers' purchase intention for Allusweet milk beverages in the blind test situation was close to that of sucrose products; and after knowing the basic information about the sweeteners used, Allusweet milk beverages showed more purchase intention than other samples.

Comparison of sensory properties of chocolates made with different sweeteners



SPECIFICATION

Product Specification Sheet

Product Name: Allusweet	Issued On: March 23, 2022
Brand Name: Ingvia®	Approved by: Yanjie Kou
Item: DA98	Country of Original: China

DETERMINATION	SPECIFICATION	METHOD
IDENTIFICATION		
Color	White or yellowish	Visual
State	Powder	Visual
ASSAY		
D-Allulose (wt/wt% on dry basis)	≥98.0%	HPLC (in-house method)
TESTS		
pH	Between 3.0 and 7.0	USP<791>
Loss on Drying	≤1.0%	AOAC 941.14
Ash	≤0.1%	AOAC 900.02
Lead (Pb)	≤0.5mg/kg	AOAC 2015.01
Arsenic (As)	≤0.5mg/kg	AOAC 2015.01
Cadmium (Cd)	≤0.5mg/kg	AOAC 2015.01
Mercury (Hg)	≤0.5mg/kg	AOAC 2015.01
MICROBIAL		
Total Plate Count	≤1000cfu/g	FDA-BAM chapter 3
Yeast & Mold	≤100cfu/g	FDA-BAM chapter 18
E. Coli (/1g)	<3MPN/g	FDA-BAM chapter 4
Staphylococcus Aureus	<10cfu/g	FDA-BAM chapter 12
Salmonella (/25g)	Negative	FDA-BAM chapter 5

Packaging

The product is packaged in a Low-density polyethylene bag (food grade).
The inner bag is placed in a kraft paper bag, net weight 25 kg per bag.

Storage condition

Store in a cool and dry place. Avoid from strong light, heat and odious materials.

Shelf life

2 years when properly stored.

INGIA

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