Supplementary

Table S1. Inclusion and exclusion criteria of the study.

	Criteria
Inclusion criteria	• MASLD confirmed by VCTE CAP + at least one of metabolic criteria (obesity, dyslipidemia, hypertension, diabetes mellitus type 2); • Reported consumption of alcohol less than 30 ml/day in males and less than 20 ml/day in females; • Negative HBsAg, anti-HCV, AMA-M2; • Willingness to participate based on signed written informed consent; • Controlled glycemia. If stable glycemia is achieved on treatment, the following requirements should be met: • No qualitative changes in treatment within 6 months before enrollment (i.e., the introduction of a new antidiabetic therapy); • Doses of anti-diabetic medications should be stable for 6 months in patients who receive metformin, gliptins, sulfonylureas, sodium/glucose cotransporter 2 (SGLT-2) inhibitors, glucagon-like peptide 1 agonists (GLP-1) or insulin; • No new medications during participation in the study.
Exclusion criteria	• Pregnancy and breastfeeding; • Liver cirrhosis based on liver histology, or APRI > or= 1; or BARD score > or = 2; • Chronic heart failure (I-IV class by NYHA); • Past bariatric surgery; • Clinically relevant acute cardiovascular event within 6 months prior to screening; • Uncontrolled arterial hypertension despite optimal antihypertensive therapy; • Diabetes mellitus type 1; • A level of glycated hemoglobin [HbA1c] >9.0%; • Hypersensitivity to the studied product or any of its components; • The intake of any medications that may affect the absorption, distribution, metabolism or excretion of investigational products or may lead to the induction or inhibition of microsomal enzymes (for example, indomethacin), from the moment of randomization to the end of treatment; • Any medical conditions that may significantly affect life expectancy, including known cancers; • Any clinically significant immunological, endocrine, hematological, gastrointestinal, neurological, tumor or psychiatric diseases; • Mental instability or incapacity, which may impact the ability to give informed consent, take part in the study, or affect the ability to comply with the requirements of the study protocol. • Positive HIV blood antigen test; • Serum aspartate aminotransferase (AST) and/or ALT >10 x upper normal limits; • conjugated bilirubin > 26 mcmol/l due to changes in liver function (patients with Gilbert's disease are allowed to the study); • The international normalized ratio is >1.40 due to changes in liver function; • Platelet count <100 x 10^9/L due to portal hypertension; • Clinically significant renal dysfunction, including nephrotic syndrome, chronic kidney disease (determined based on the estimated glomerular filtration rate [eGFR] less than 60 ml/min/1.73 m^2).

Table S2. Carryover effect analysis results for sensory attributes.

Attribute	W_statistic	p_value	Interpretation
Appearance	5.0	0.5716	No significant carryover
Color	3.5	0.1294	No significant carryover
Aroma	18.0	0.0238	Significant carryover detected
Texture	30.0	0.0197	Significant carryover detected
Taste	85.0	0.0071	Significant carryover detected

Table S3. Analysis of hedonic rating (5-point scale) of sensory attributes between brazzein and sucrose-sweetened ice cream during Period 1.*

Attribute	Brazzein mean	Sucrose mean	Odds ratio (95% CI)	P value
Appearance	4.978	4.983	0.772 (0.047, 12.689)	0.8562
Color	5.000	5.000	Not estimable	—
Aroma	4.711	4.776	0.739 (0.240, 2.278)	0.5985
Texture	4.911	4.914	0.587 (0.125, 2.765)	0.5007
Taste	4.800	4.776	0.810 (0.293, 2.234)	0.6833

* Mean ratings are presented for descriptive purposes only. Because median ratings were uniformly 5 for both products across sensory attributes, medians are not shown. Statistical comparisons were performed on Period 1 data using cumulative link models that treated the 5-point hedonic scores as ordinal outcomes. Because the Period 1 subset contains one observation per participant, participant-level random effects were not estimable, and models were fitted without random effects. Odds ratios greater than 1 indicate higher odds of a higher rating for brazzein relative to sucrose. Period 1 included 45 brazzein observations and 58 sucrose observations. Color was not estimable because all observations had the same score.

Table S4. Ice cream nutritional compositions and energy values.

	Ice cream 1	Ice cream 2
Butter/milk base	+	+
Maltitol	+	-
Oligofructose	+	-
Sucrose	-	14%
Brazzein	0.014%	-
Nutrients and energy/100g		
Proteins, g	4.0	3.9
Carbohydrates, g	18.8	20.7
Fats, g	12.0	12.1
Energy, kcal	199.2	207.3

Table S5. Ice cream physicochemical properties.

Property	Method / conditions	Control (mean ± SD)	Brazzein (mean ± SD)
pH	25 °C	6.65 ± 0.06	6.74 ± 0.05
Overrun (%)	Mass difference, 50 mL cup	43.30 ± 0.13	45.4 ± 0.27
Apparent viscosity (mm^2/s)	5 °C, 100 s^{-1}, rotational viscometer	820.4 ± 12.3	1459.9 ± 51.4
Hardness (N)	Penetration 5 mm probe, 2 mm/s, −18 °C	23.7 ± 1.9	37.4 ± 2.1
Young's modulus (N/mm^2)	Slope of the linear part of the stress–strain curve	519.3 ± 87.4	967.9 ± 92.3
Melting rate (g/10 min)	Mass loss during 60 min at 20 °C	5.84 ± 0.01	3.12 ± 0.02