

Supplementary Materials

Trehalose restrains fibril load towards α -lactalbumin aggregation and halts fibrillation in a concentration-dependent manner

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Table S1. Different Physical and Chemical Properties of Trehalose

Parameter	Value
Chemical formula	C ₁₂ H ₂₂ O ₁₁ (anhydrous) C ₁₂ H ₂₂ O ₁₁ ·2H ₂ O (dihydrate)
Molecular weight	342.3 g mol ⁻¹ (anhydrous) 378.3 g mol ⁻¹ (dihydrate)
Appearance	White, odourless powder
Sweetness (relative)	45% that of sucrose
Polymorphs	Two crystalline forms: anhydrous (T _α , T _β) and dihydrate (T _h), one well-defined amorphous form
Chemical nature	Nonreducing disaccharide (α-D-glucopyranosyl-α-D-glucopyranoside)
Relative density	1.22 g cm ⁻³ (at 25°C and weight fraction = 0.5)
Glass transition temperature	117°C
Thermostability	>99% (120°C/90 min)
Melting point	203°C (anhydrous) 97°C (dihydrate)
Heat of fusion	53.4 kJ mol ⁻¹ (anhydrous) 57.8 kJ mol ⁻¹ (dihydrate)
Hygroscopicity	None at <90% RH
Solubility in water	68.9 g/100 g (at 20°C)
Freezing temperature (100 mg mL ⁻¹ water)	-197°C
Optical rotation	[α] _D = +178°C
Viscosity	8.2 cp (at 40°C and weight fraction = 0.5)
Chemical reactivity	Does not usually react with proteins
Regulatory status	GRAS (generally regarded as safe) by US FDA

RH, relative humidity.

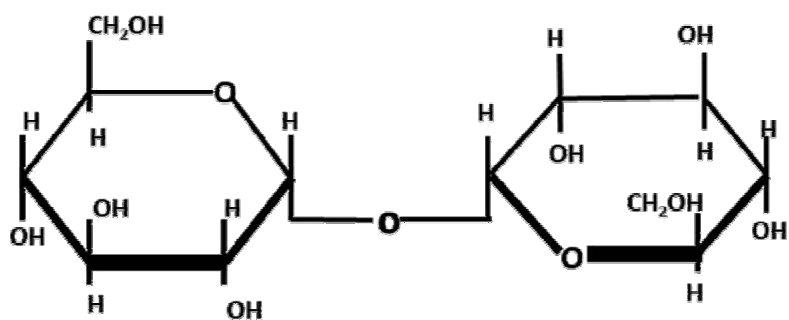


Figure S1. Structure of trehalose.

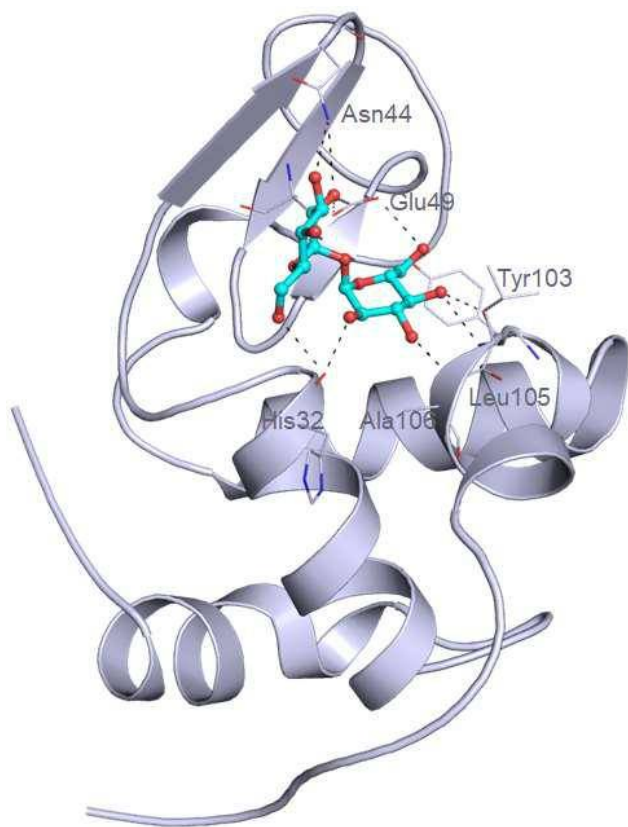


Figure S2. Diagrammatic representation of trehalose binding with alpha-lactalbumin with significant interactions offered.