

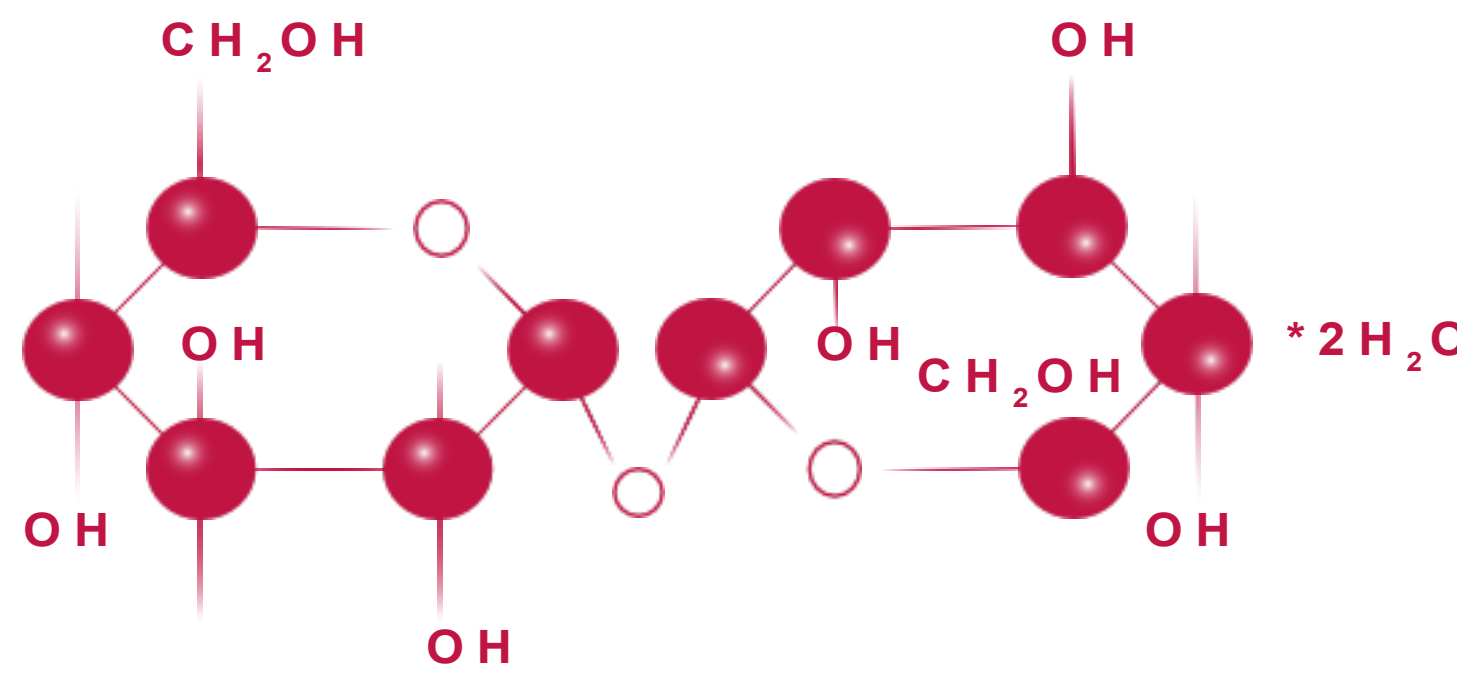
A natural sugar to extend the shelf life of biologics

- Trehalose -

Trehalose is a naturally occurring disaccharide consisting of two glucose molecules.

It is found naturally in:

- Mushrooms
- Yeast
- Some bacteria, insects and plants



Empirical Formula $C_{12}H_{22}O_{11} + 2H_2O$
 Molecular Weight 378.33
 CAS Number 6138-23-4

Advantages

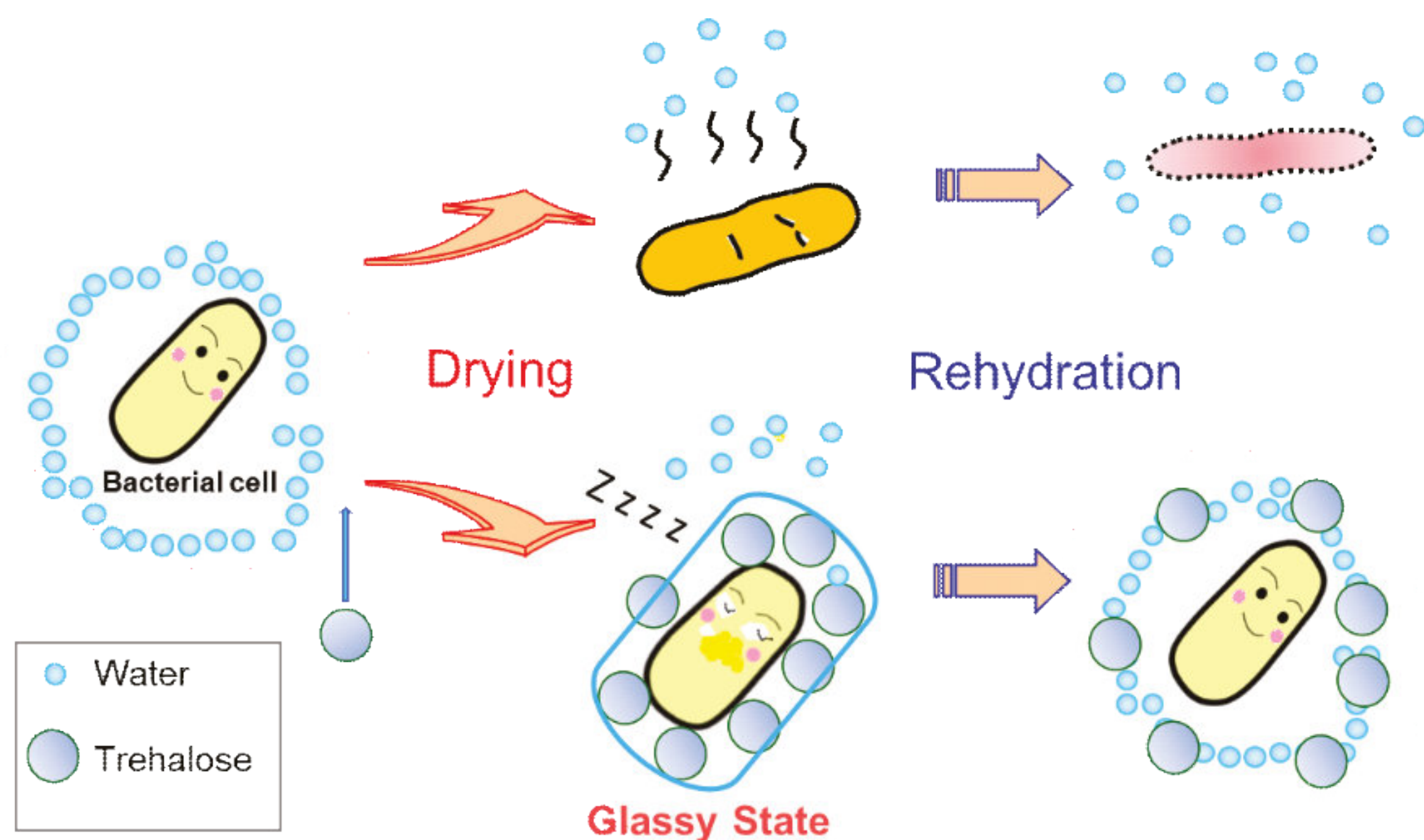
- » **Naturally** occurring
- » **Soluble in water** and good osmo-regulator
- » Excellent **heat stability** (autoclavable)
- » **High purity** (less effect on pH)
- » **Stabilizing effect** on biomaterials and cells

Application Areas

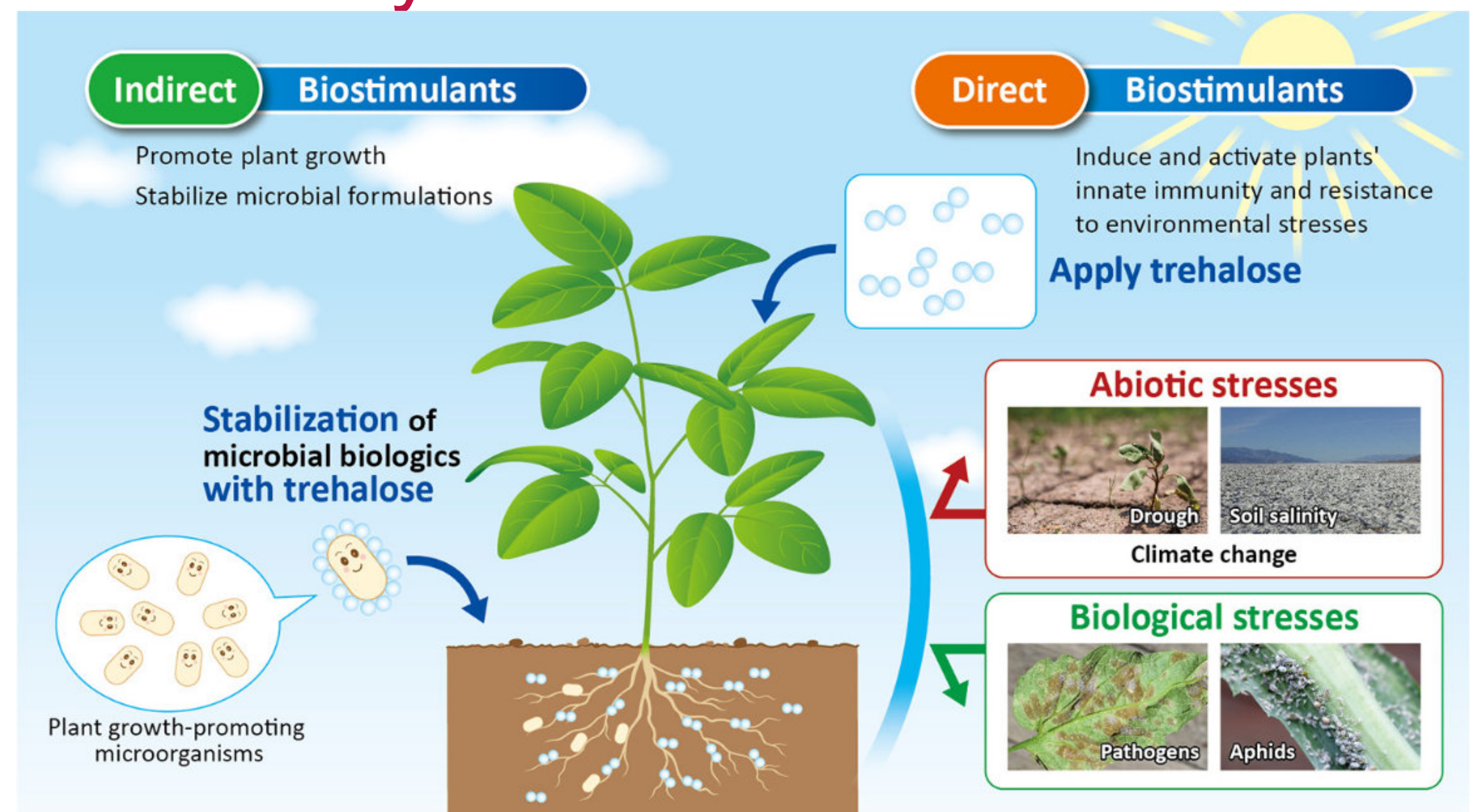
- » Liquid inoculant
- » Seed coating
- » Bio-control
- » Bio-Stimulant



How is Trehalose stabilizing bacterial cells under dry condition?



Vitrification: Trehalose glassy matrix (as a cocoon or amber) physically shielding cells or protein from abiotic stresses.



Effect of Trehalose on Plant Growth-Promoting Bacteria

It is known that bacterial inoculation is a technique to increase crop yield. Especially, the inoculation with N_2 fixing bacteria is of interest for the common crops, e.g. soy beans and other legumes.

The use of **bacterial inoculation reduces** the use of environmentally toxic, and inorganic fertilizers in a high quantity.

Living organism's are sensitive to:



Shelf life extension of biologics:

The shelf life of liquid inoculant with bacteria is generally only **6 months** at **ambient condition**.

Just additional **Trehalose** keeps inoculated bacteria viable for up to **24 months**.



Typically 6 months
With Trehalose < 24 months

Production

Our group company HAYASHIBARA is the global pioneer for sustainable industrial sugar production.

We produce our carbohydrates by fermentation and enzymatic treatments from non-GMO starch raw material.

