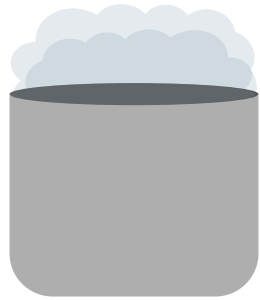


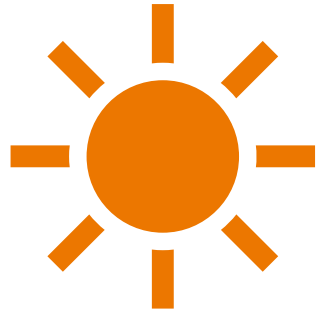


Innovative post-harvest processing of kelp

PhD-work by Randi Sund in SusKelpFood
at Nofima and DTU



Blanching



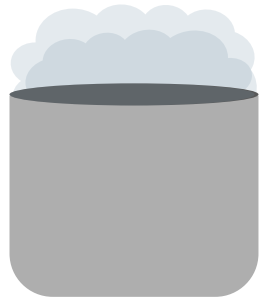
Drying



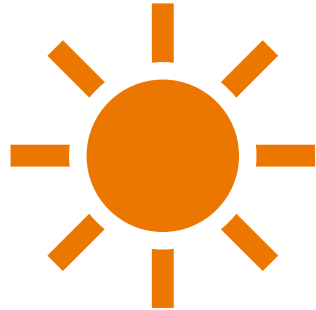
Freezing



Fermentation



Blanching



Drying



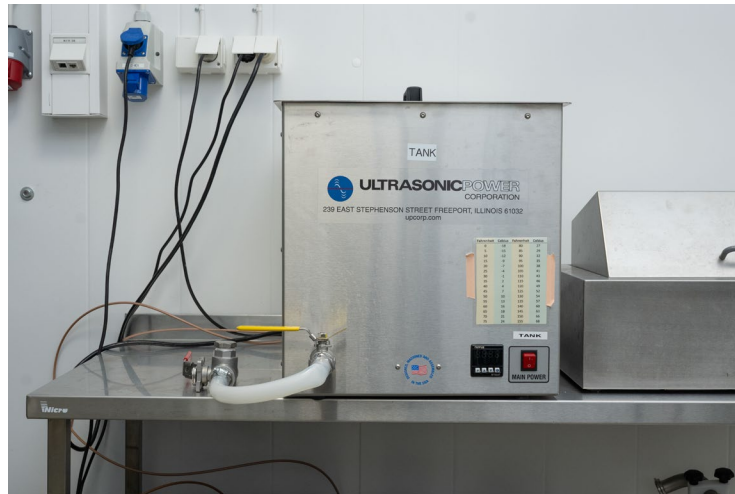
Freezing



Fermentation



Pulsed electric fields (PEF)

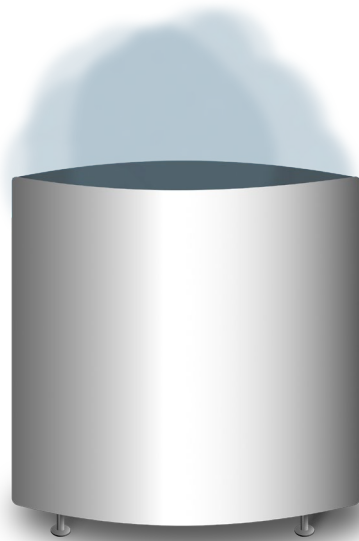
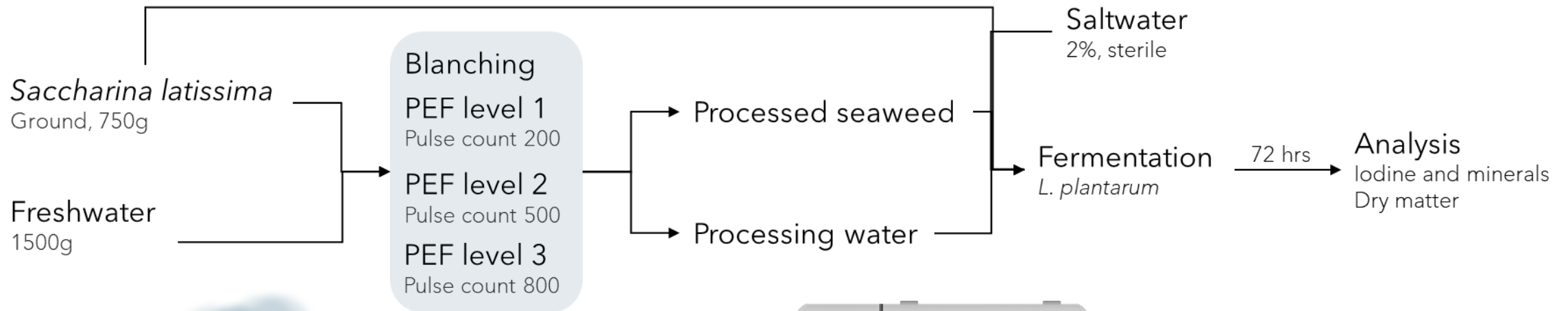


Ultrasound



Microwaves

PEF & Fermentation

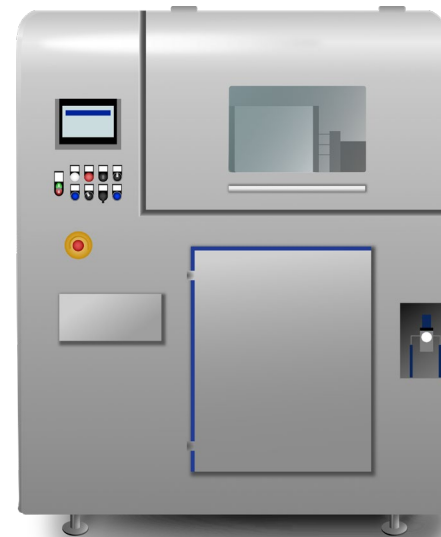


Blanching conditions

Time: 120 seconds

Temperature start: $49.5 \pm 0.1^\circ\text{C}$

Temperature end: $39.5 \pm 1.7^\circ\text{C}$



PEF conditions

Pulse width: $6\mu\text{s}$

Frequency: 30Hz

Electrode voltage: 24kV

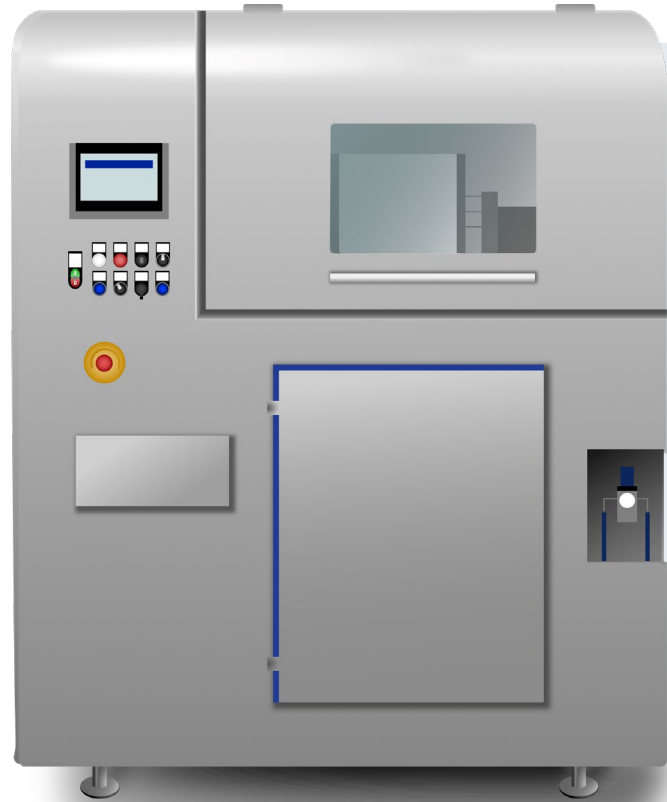
Pulse count: 200, 500, or 800

Time: 6, 15, or 26 seconds

Temperature start: $19.4 \pm 1.2^\circ\text{C}$

Temperature end: $23.8 \pm 1.7^\circ\text{C}$

PEF & Fermentation



PEF conditions

Pulse width: $6\mu\text{s}$

Frequency: 30Hz

Electrode voltage: 24kV

Pulse count: 200, 500, or 800

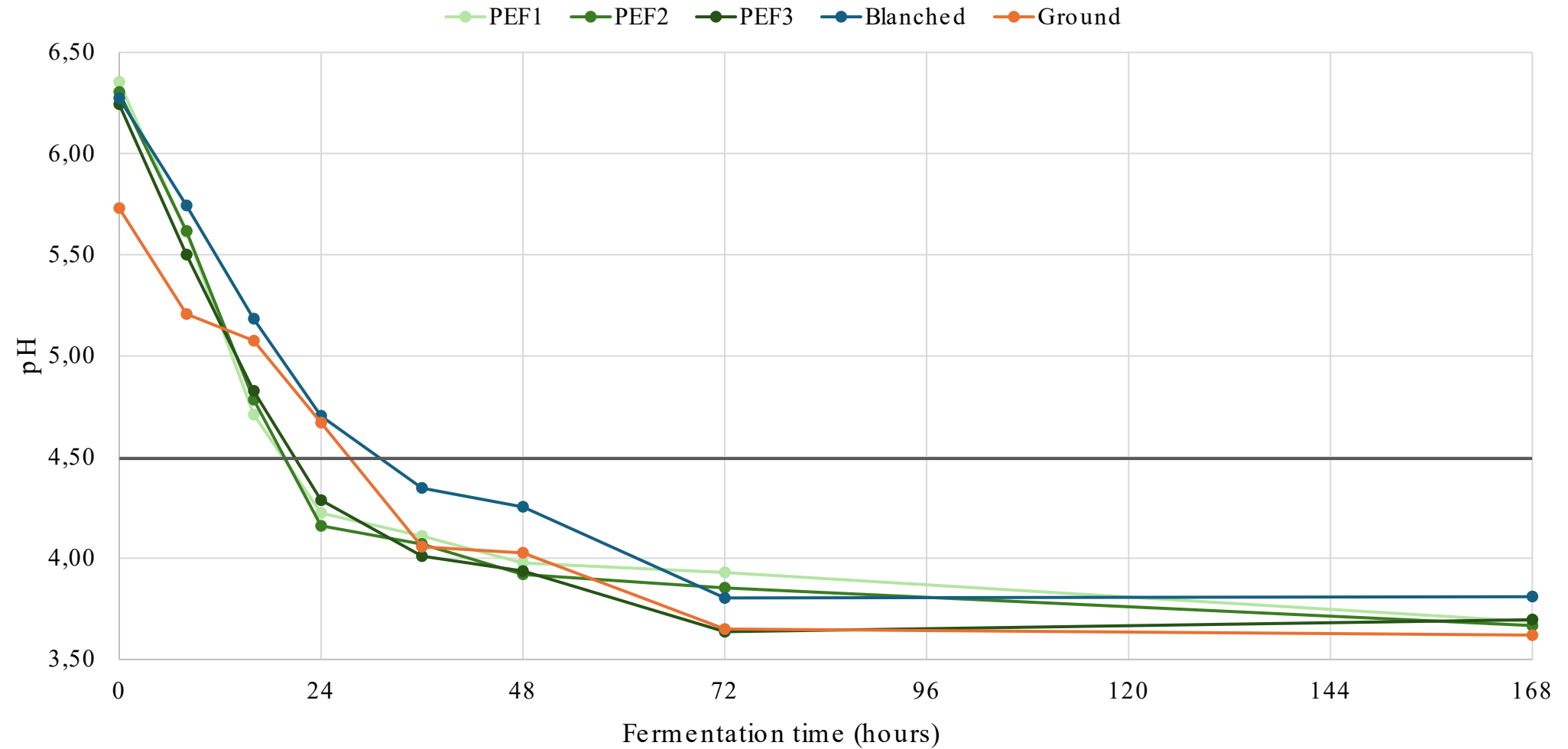
Time: 6, 15, or 26 seconds

Temperature start: $19.4\pm 1.2^{\circ}\text{C}$

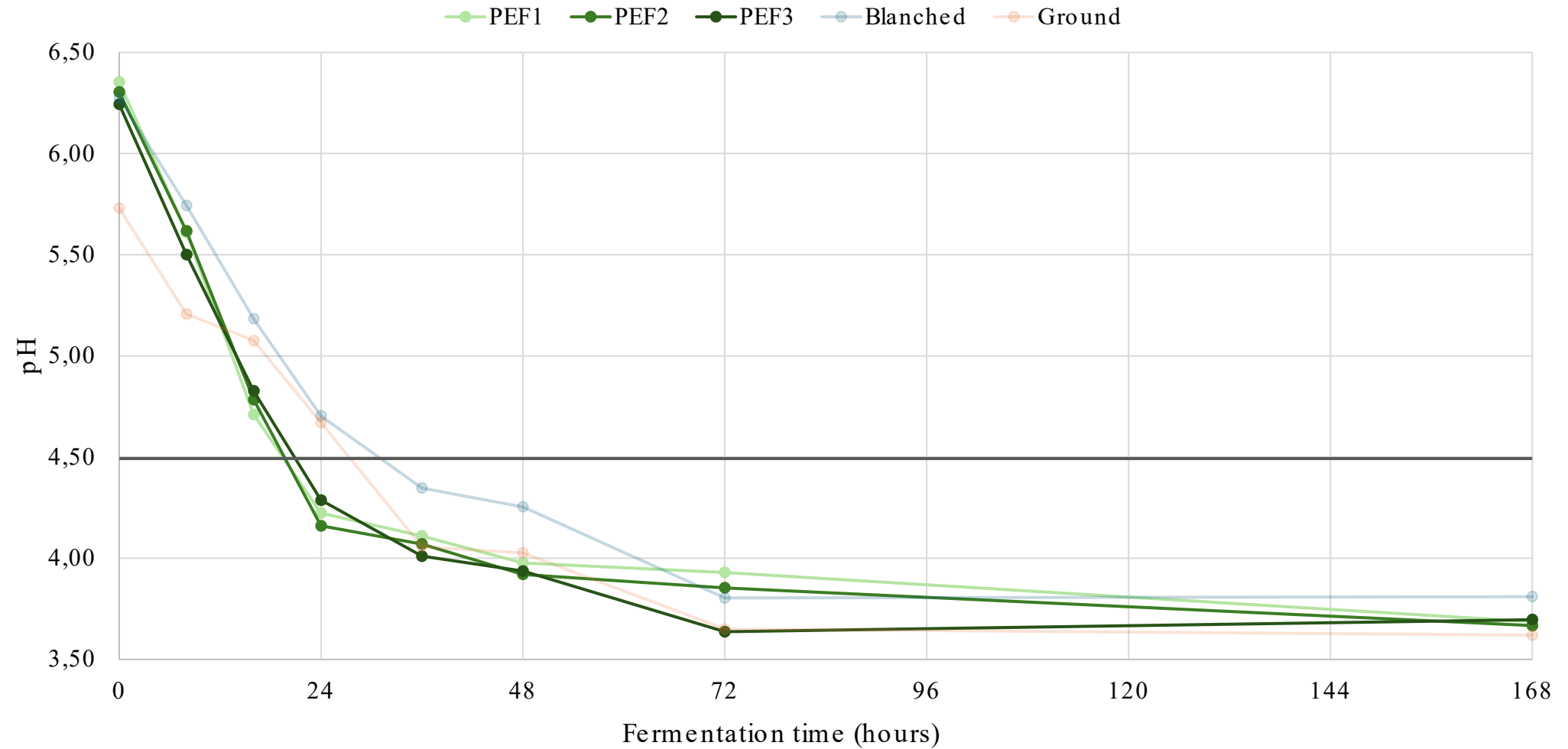
Temperature end: $23.8\pm 1.7^{\circ}\text{C}$



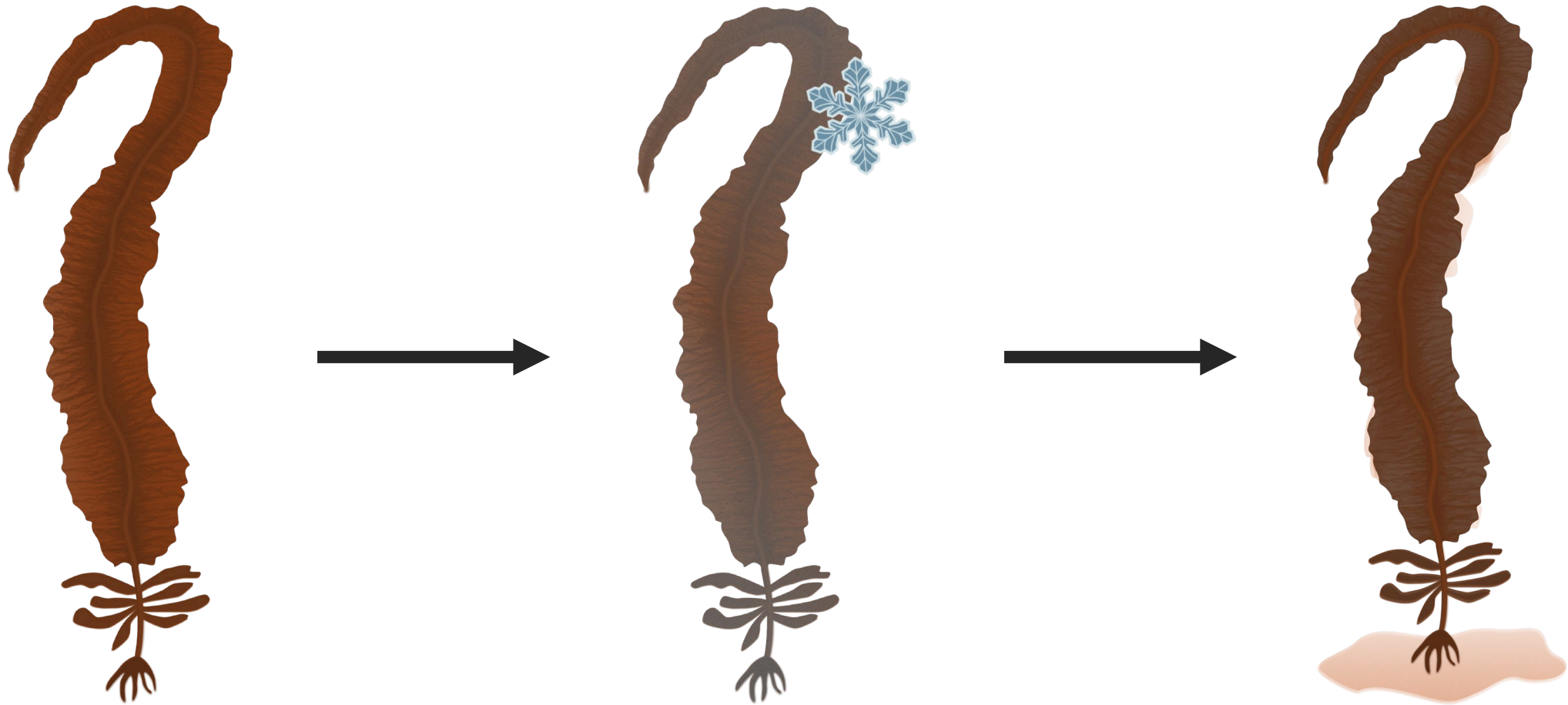
PEF & Fermentation



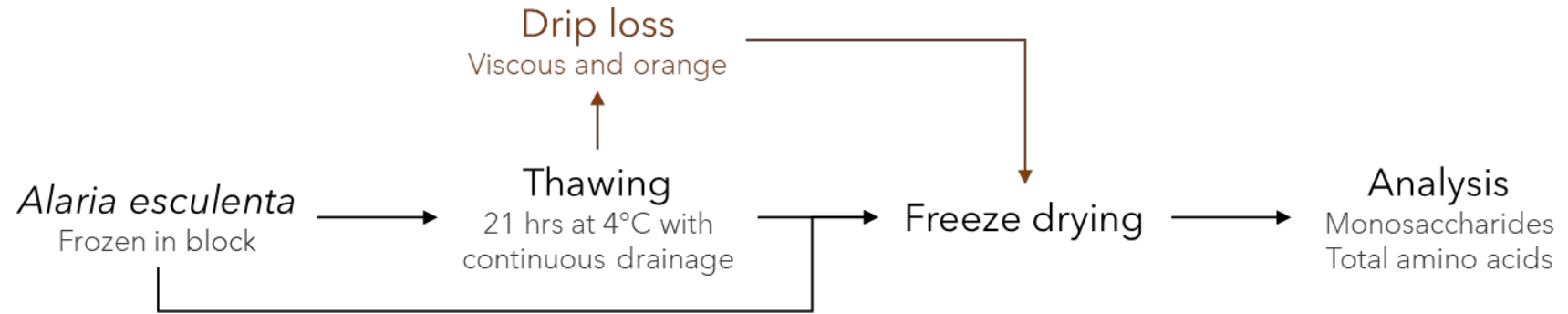
PEF & Fermentation



Freezing & Thawing



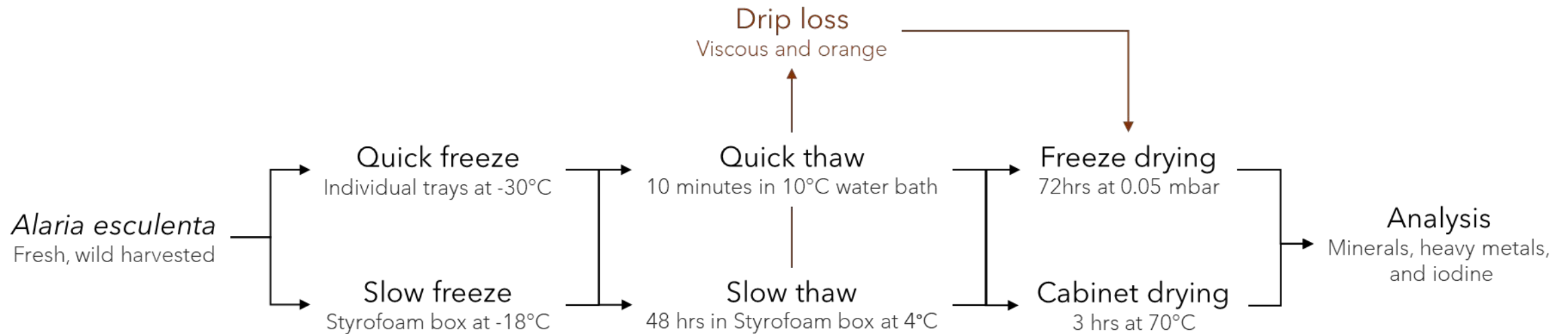
Thawing of Industrially Frozen Winged Kelp



Thawing

- Drip loss: 57% of wet weight
- Majority of mannitol lost
- Flavour components alanine, aspartic acid and glutamic acid lost

Quick and slow freezing and thawing



Quick freezing → Drip loss: 20% of wet weight
Independent of thawing method.

Slow freezing → Drip loss: 34-42% of wet weight
Highest for slow thawing

Slow freezing & quick thawing

→ Total arsenic reduction: 29%

→ Iodine reduction: 35%

Full article







Thank you for
your attention!

