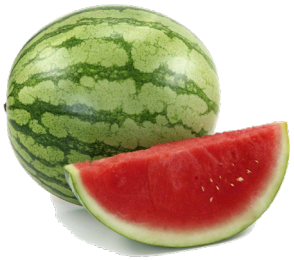
CONCENTRATING DELICATE FLAVORS



A FRESH FLAVOR CHALLENGE

The fresh flavor of fruit juices can be difficult to retain and preserve. This is especially true for watermelon's delicate flavor beloved by consumers across the globe. Rich in vitamins, minerals and antioxidants, such as L-citrulline and lycopene, watermelon juice also has significant health and wellness benefits.

Fresh watermelon juice has a limited shelf life. The delicate product must be shipped and stored frozen, which comes at a significant cost. In many markets, transportation costs prohibit the use of the fresh watermelon juice as an ingredient.

Logistics costs are greatly reduced when shipping a concentrate. However, the flavor, aroma, and nutritional benefits of conventional thermal concentrates are severely compromised, limiting desirability of those concentrates.

PORIFERA'S GENTLE CONCENTRATION APPROACH

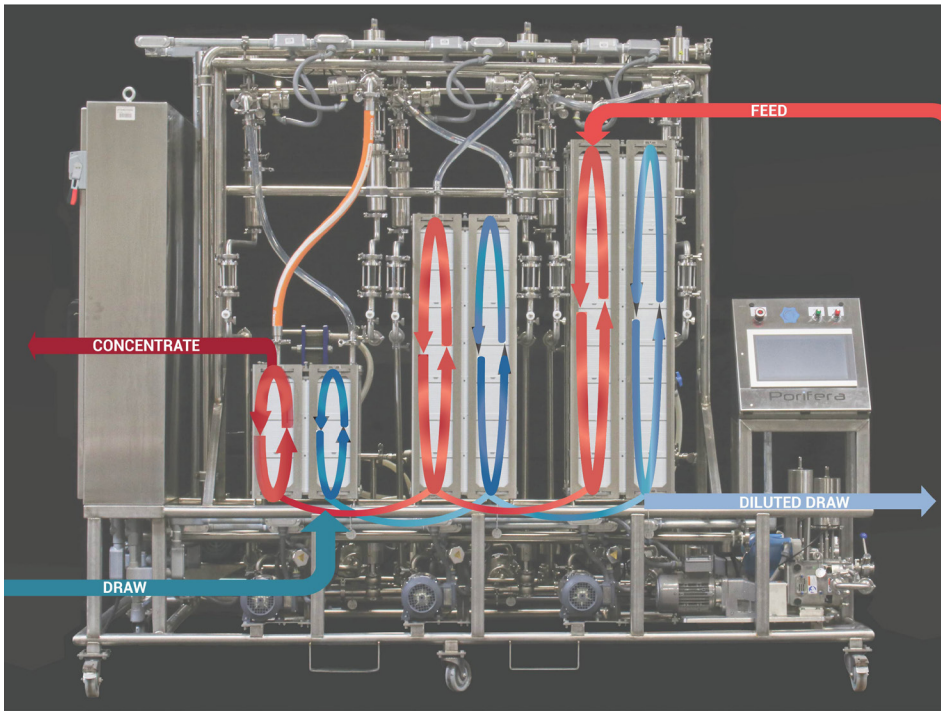
Porifera partnered with Van Groningen & Sons, a fourth-generation Californian farming business, to test, demonstrate, and commercially scale-up the concentration of watermelon juice.

Porifera uses a natural osmotic concentration process to remove the water and squeeze all the original nutrients, flavors, aromas, and colors into a 10x smaller volume. Porifera's membrane system gently handles the juice without freezing, heating, evaporating or using pressure. With the reduced volume, transportation, packaging and storage costs are greatly reduced. In addition, shelf-stability is improved due to reduced water activity at high concentrations.

75%
Reduction in logistics costs

90%
Reduction in volume

6
month average return on investment



PORIFERA CASE STUDY: WATERMELON CONCENTRATION

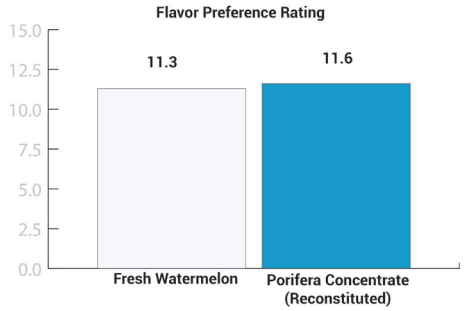
SAVINGS WITHOUT COMPROMISING QUALITY

Porifera's system concentrated 8 Brix juice into a 65 Brix concentrate, achieving as high a concentration as thermal processing and providing a 10x reduction in volume.

In appearance, flavor, and nutrition, Porifera's reconstituted concentrate was indistinguishable from fresh juice.

Independent sensory testing by the USDA Research Laboratory in Albany, CA showed no preference for fresh juice over the reconstituted concentrate. Nine out of ten taste testers preferred the aroma of Porifera's concentrate to the aroma of the thermally-processed concentrate. The USDA's nutritional analysis demonstrated complete retention of lycopene, citrulline and total antioxidant activity in the Porifera concentrate.

Porifera's concentration process reduces juice to 1/10th of its original volume, lowering the storage, shipping and packaging costs by 90%. After taking into account the additional processing costs to concentrate, the net logistical savings are as much as 75%, in some cases resulting in an equipment payback period as short as 6 months.



	Fresh Juice	Porifera Concentrate (Reconstituted)
Brix at 20° C	8.0	8.5
Total Dietary Fiber (%)	0.5	0.6
Lycopene (ppm)	15	16
Citrulline (%)	0.12	0.13
Total Soluble Phenolic Content (mg GA/kg)	124	138

"I thought I was drinking our fresh watermelon juice!"

-Dan Van Groningen, Van Groningen & Sons, Inc.

EXAMPLE SAVINGS

			Fresh Juice	Concentrate
Assumptions	Juice Delivered		35,200 gallons	36,435 gallons (reconstituted)
	# of Truckloads	1 truck = 64 drums of 55 gal/each	10	1
	Product Volume Shipped		35,200 gallons	3,520 gallons
	Packaging Cost	Drums & liners	$33,500	$3,350
	Cold Storage Cost	Store 64 pallets for 1 month	$12,500	$1,250
	Trucking Cost	California to East Coast	$70,000	$7,000
Unit Costs	Cost to Deliver	$/gallon single-strength juice	$3.30/gallon	$0.32/gallon
	Cost to Concentrate		n/a	$0.5-1.0/gal
	Logistics Savings		n/a	60-75%
Equipment Payback Period		Utilize system 3 months/year		24 months
		Utilize system 10 months/year		6 months

*Cost to process includes assumptions for variables including capital investment for installing and operating a system that removes 780 liters per hour of water, labor, chemicals, membrane replacement and energy use. Costs will vary for different products, concentration factors, required level of automation, etc.

Porifera®

To learn how Porifera systems can reduce your logistics costs contact us at **sales@porifera.com** to schedule a trial demonstration.