



YUNOSATO
KONONO WAKAYAMA



Hot Spring facility with hotel & NEW Research Lab



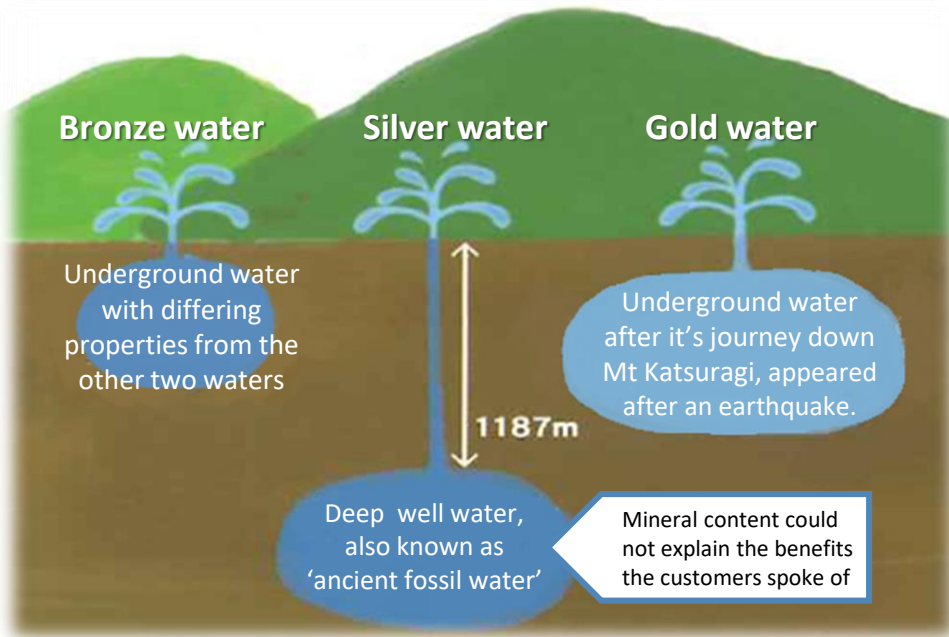
Built in 1987 in Konono, Wakayama, Yunosato has been involved in water molecular research with Prof. Tsenkova since 2012.



Products/Services with our waters

- Hot spring
- Hotel
- Restaurant
- Farming
- Kitchen workshop (soy yogurts, jams, etc.)
- Cosmetics

Three types of water at Yunosato



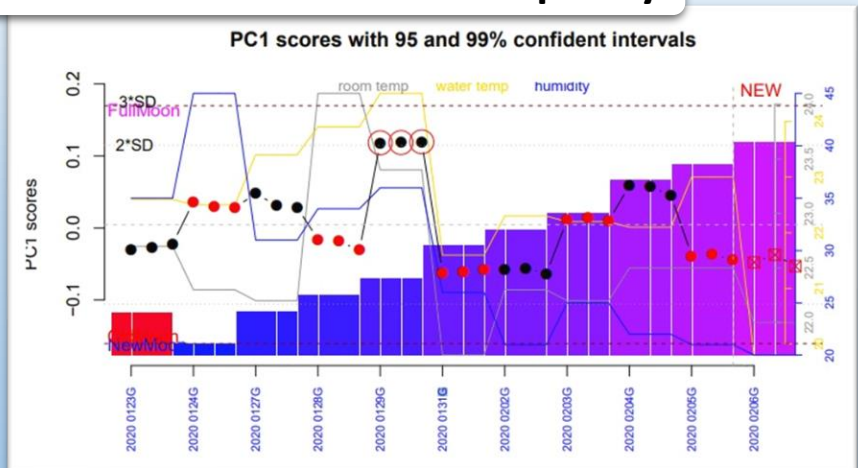
Experiments since 2012

- Water and yogurt quality monitoring
- Clinical trials (effects of drinking, rinsing with water)
- Water in produce and foods

Using Aquaphotomics to monitor water quality

Gold Water Quality Control Monitoring (since 2012)

- Measure spectra of Gold Water with NIRGUN (daily at 10am)
- Apply spectra, temperature, humidity and moon age in QC software to monitor quality.



Soy Yogurt Research

Purpose

Evaluate and determine the type and ratio of bacteria as well as the ratio of Gold water and TskunoShizuku, in order to produce soy yogurt.

Methods and materials

Instruments:

- FOSS XDS Rapid Luquid™ Analyzer
- NIRGUN

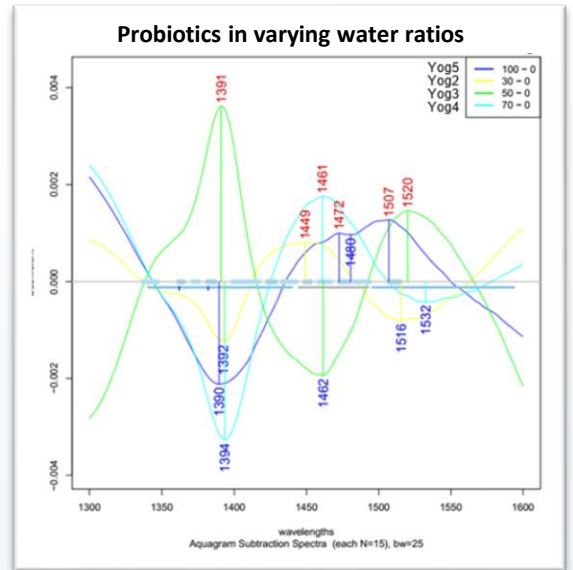
Preparations:

Cultivate probiotic, non-probiotic and moderate strains at 37°C for 24 hours in 5 different ratios of TS and GW:

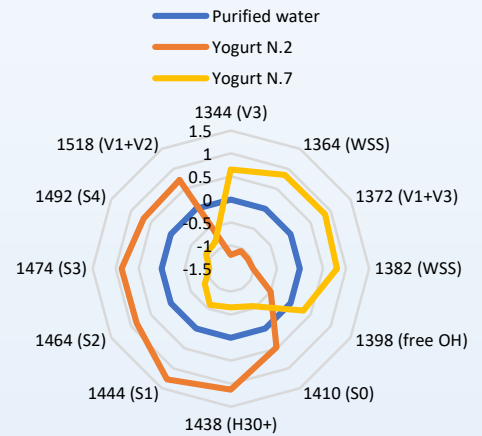
- 0 = 100%WG
- 30 = 70%WG & 30%TS
- 50 = 50%WG & 50%TS
- 70 = 30%WG & 70%TS
- 100 = 100%TS

Results

- Strains vary in their ability to survive, grow and yield biomass under stressful conditions
- Yunosato Spa waters can improve probiotic characteristics and affect their growth



Yunosato yogurts (purified water centered)



Cosmetics Research

Purpose

Examine and evaluate Yunosato cosmetics produced in 2013 and develop new cosmetics such as lotion, essence and moisturizing cream.

Methods and materials

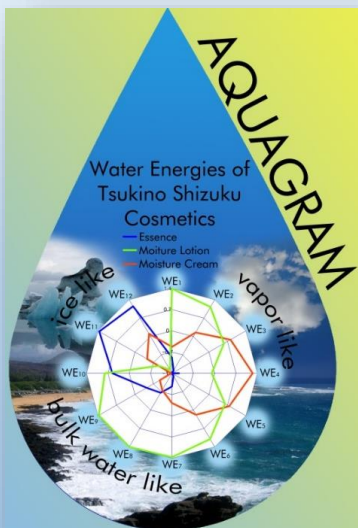
Instruments:

- FOSS XDS Rapid Luquid™ Analyzer
- NIRGUN

Samples:

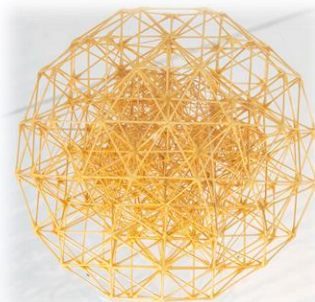
- Yunosato Lotion
- Yunosato Essence
- Yunosato Moisturizing Cream

Prepare samples with 5% & 7% TS



Results

The 3 types of cosmetics cover all ranges of water bands at 1st water overtone (less bonded, free and strongly bounded).

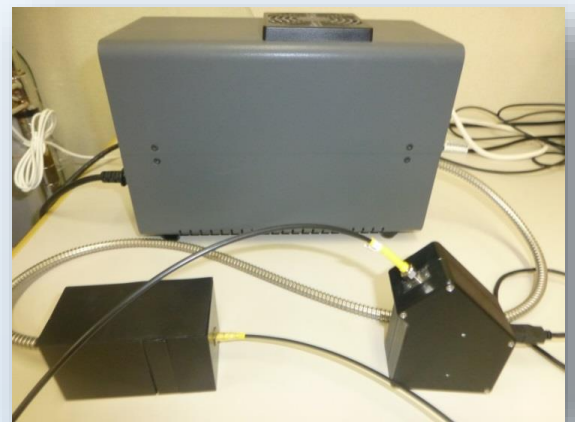


Yunosato Aquaphotomics Lab



Past data acquisitions

- ❖ **Water** (over 46,000 spectra data)
- ❖ **Yogurt**(over 8000 spectra data)
- ❖ **Clinical Trials**
 - Onsen (soaking in bath)
 - Drinking water
 - Exercise
 - Music
 - Others
- ❖ **Produce/Foods**
 - Vegetables, teas, herbs
- ❖ **Cosmetics**
 - Skincare products (in-house and commercial)



Hamamatsu Photonic Spectrometer
Daily water experiments



APS – Aquaphotomics Sensor



NIRGUN – Gold water monitoring, Sasho yogurt, clinical trials

Bio-functional water project

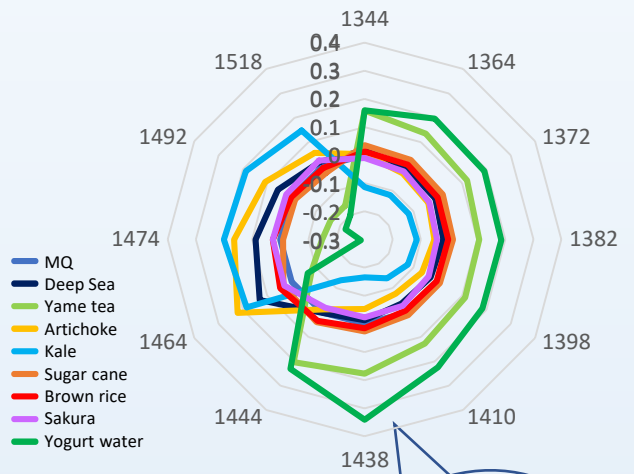
FEC Vacuum Drying Unit

Evaporate and extract water and solids from produce, plants, foods in a vacuum state at low temperature.

After filtering, extracted water is called *bio-functional water*



BFW (Bio-Functional Waters)



Over 20 types of vegetables and fruits collected since January 2021

Data Analysis

Measure spectra of various liquids and organic products using NIRS



Blending

Blend our three waters in specific chosen ratios



Product Development

- Cosmetics
- Farming
 - Hydroponics
 - Fertilizer
- Drinking water

