CELLFOOD Surface Tension Study

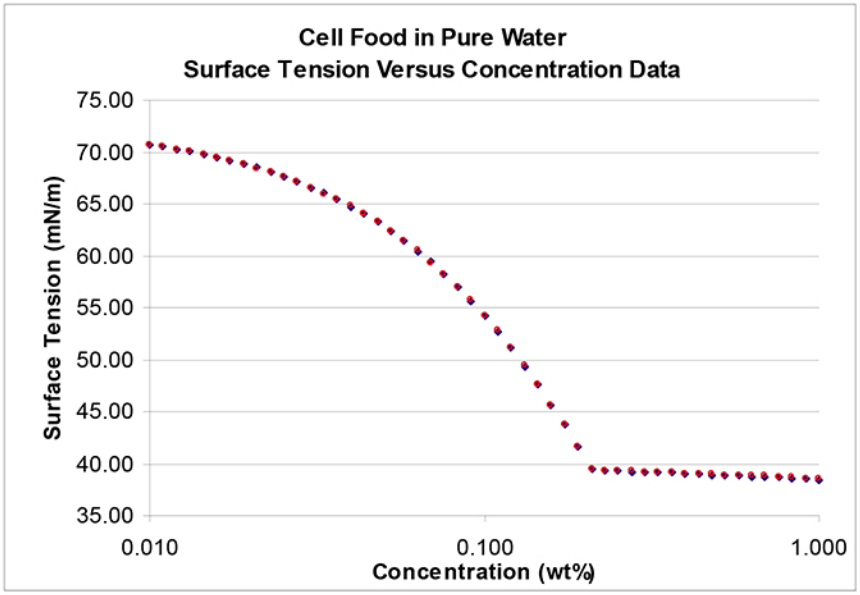
In a recent study conducted at Augustine Scientific Research Center, surface tension as a function of concentration of CELLFOOD® in a glass of water was measured using a Kruss Processor Tensiometer K100 with automated dosing.

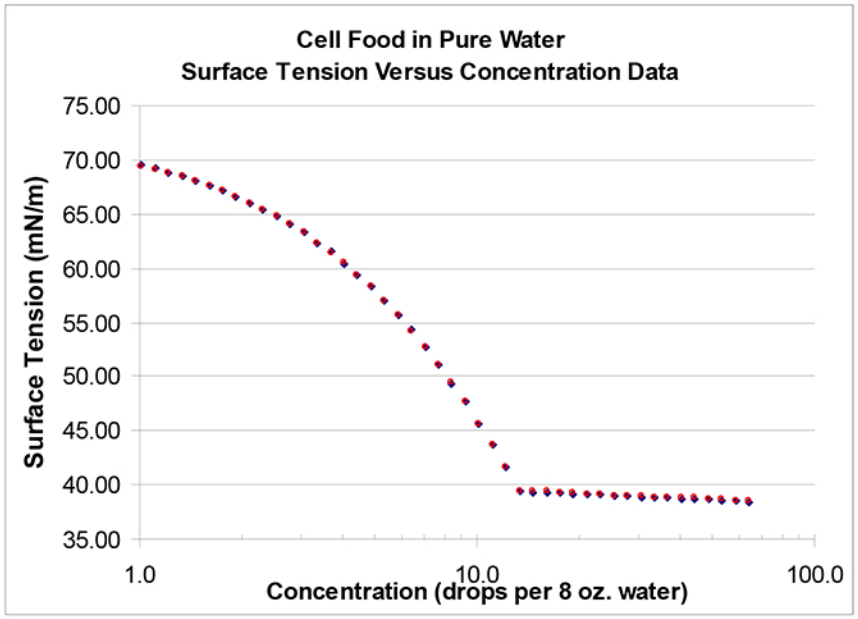
The surface tension of ordinary tap water is approximately 73 mN/m (dynes/cm). The surface tension of extracellular body fluids is much lower at approximately 40 mN/m (dynes/cm). This low surface tension is critical to healthy cellular function, absorption of nutrients, and the removal of harmful toxins. A higher liquid surface tension causes the surface to act like a stretched elastic membrane inhibiting absorption while increasing molecular resistance.

Surface tension of the tap water (control) was calculated to measure 72.8 mN/m (dynes/cm). Two separate controlled dilution experiments were conducted simultaneously; one as drops per 8 oz. of water, and the second as %wt stock solution of CELLFOOD®. The results were statistically identical—in both tests, CELLFOOD® was shown to reduce surface tension to 40 mN/m (dynes/cm), the same surface tension of extracellular body fluids.

It was observed by Christopher Rulison, Ph.D., that using Avogadro's multiplication number of 6.02 x 1023 molecules/mole gives the value of 51 billion active molecules per square millimeter at the surface of a glass of water containing 8 drops of CELLFOOD®.

Dr. Rulison also noted regarding the molecular dimensions of CELLFOOD® (4-7 nanometers in size), "if we figure a standard molecular radius of gyration as (length)3/2 then your enzymes and amino acids could be expected to occupy between 43/2 = 8.0 sq. nanometers and 73/2 = 18.5 sq. nanometers each at the surface. However, since a square nanometer = 1012 sq. nanometers, each of the 51 billion molecules at the surface has 19.6 sq. nanometers of free space – more than is necessary for complete rotation." An unfortunate but common necessity for nutritional supplement manufacturers known as denaturing (packing 3-5 times the amount of protein at a surface than a radius of gyration argument would follow) is often required to assist with absorption. Because of the specific hydrophobic residues and small molecule surfactants, CELLFOOD® can pack in surface spaces upwards of 50 to 100 times below its radius of gyration in water; denaturing is not necessary due to its amphipathic nature.


Cell Food in Pure Water
Surface Tension Versus Concentration Data
75.00
70.00
65.00
60.00
55.00
50.00
45.00
40.00
35.00
Surface Tension (mN/m)
0.010
0.100
1.000
Concentration (wt%)


Cell Food in Pure Water
Surface Tension Versus Concentration Data
75.00
70.00
65.00
60.00
55.00
50.00
45.00
40.00
35.00
Surface Tension (mN/m)
1.0
10.0
100.0
Concentration (drops per 8 oz. water)

KRÜSS

Advancing your Surface Science

Technical Data K100

Measuring range	1 - 1000 mN/m
Measuring resolution	0.001 mN/m
Measuring rate	max. 50 values/sec
Weighing range	210 g +/-0.01mg
Lifting speed	0.099 - 450 mm/min
Position resolution	0.1 µm
Maximum lifting range	appr. 100 mm
Temperature range	-10 to 130°C
Temperature resolution	0.1°C
Temperature measurement	Pt100 in thermostattable jacket, optional a second Pt100 within the sample vessel
Measuring methods	Wilhelmy Plate method