Replication of Kayna's Broccoli Seed Experiment from BengstonResearch.com

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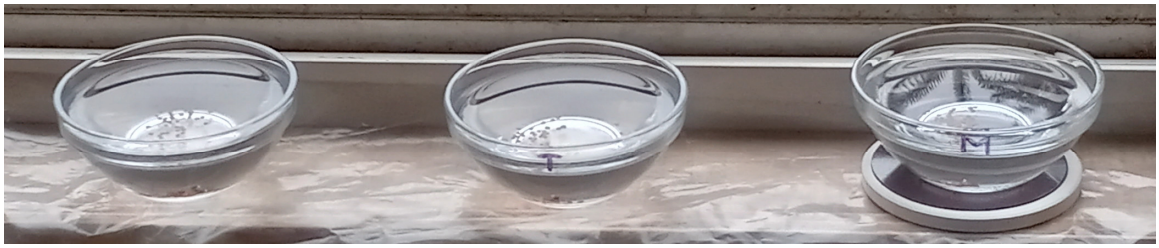
Kayna posted 2 experiments using the Bengston Method of Energy Healing® to influence the growth of broccoli seeds on BengstonResearch.com. I replicated the first one with surprising results. The second one she placed refrigerator magnets around one of the jars of broccoli seeds expecting that one to grow noticeably better than the control. However she found that the magnets inhibited growth, similar the way my treatment of the jar of broccoli seeds inhibited its growth. She asked for someone to replicate her results.

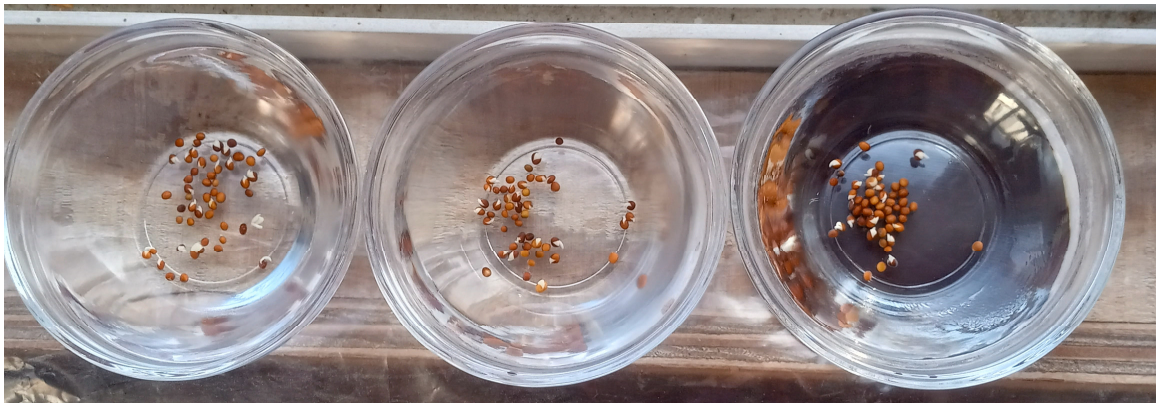
So in this 2nd broccoli seed experiment I will have 3 dishes of broccoli seeds, an untreated control (X) on the left, one that used water treated by me (T) in the middle, and a 3rd one sitting on top of a refrigerator magnet (M) on the right. **See <u>Discussion</u> at end of report for results.**

Day 1 I took three dishes, painstakingly counted out 50 broccoli seeds each and put them in 3 separate dishes, as mentioned above, X, T and M. Beforehand I filled a plastic bottle with water from my kitchen tap. Then I took water from the plastic bottle and filled a mason jar, treating that mason jar of water with a 'healing treatment' stating an intention to energize the water. I carefully filled each dish with water, T with treated water, X and M untreated water. Any seeds that were floating on top I gently tapped to the bottom. I spaced the dishes 2-3 inches apart.



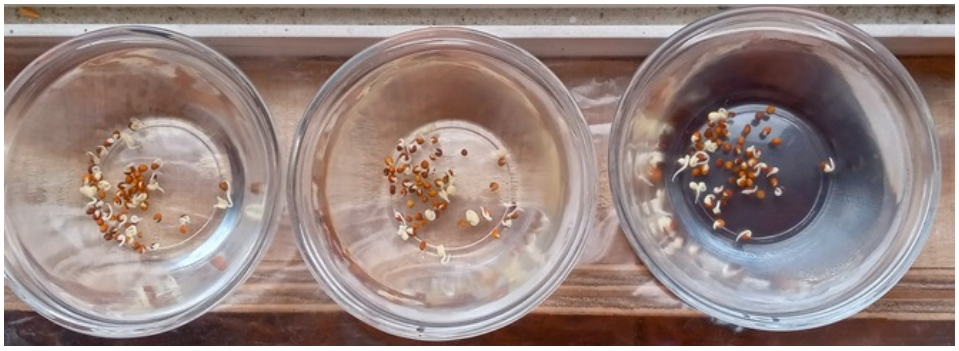
Day 2 No change. Possibly 1 sprout in T. T has 1 floating seed. My underlying intention is "for the 150 seeds to cooperate and collaborate to show that some psi phenomenon is present enough to warrant further research." Maybe I should not have used the word "psi".

Day 3: Seems like X has an edge over T which has an edge over M. (X > T > M)



Day 4: X > T > M, plus water level in M seems to be lower than T, T lower than X (due to evaporation and being used by seeds and effect of treatment and magnet?) (M evap > T evap > X evap). Also floating seed in T sprouted and sank to bottom after adding water.

Day 5:

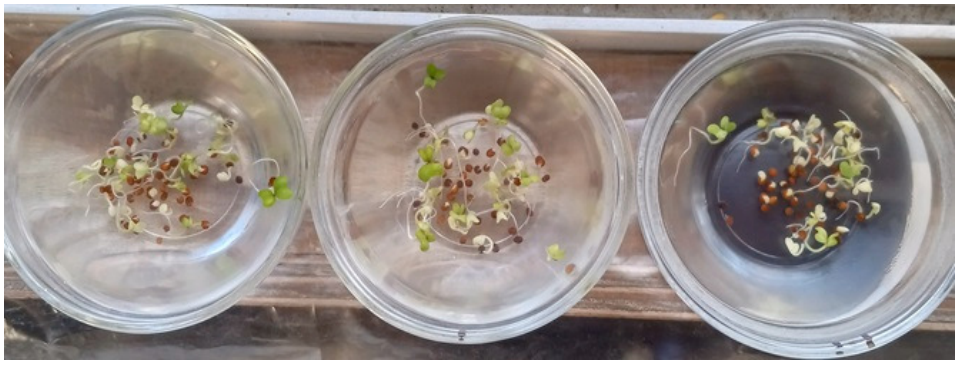


Day 6:

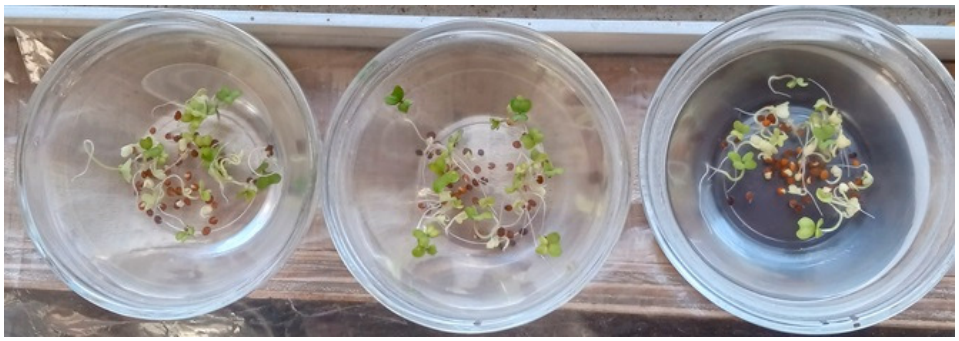
Day 7:

Day 8:

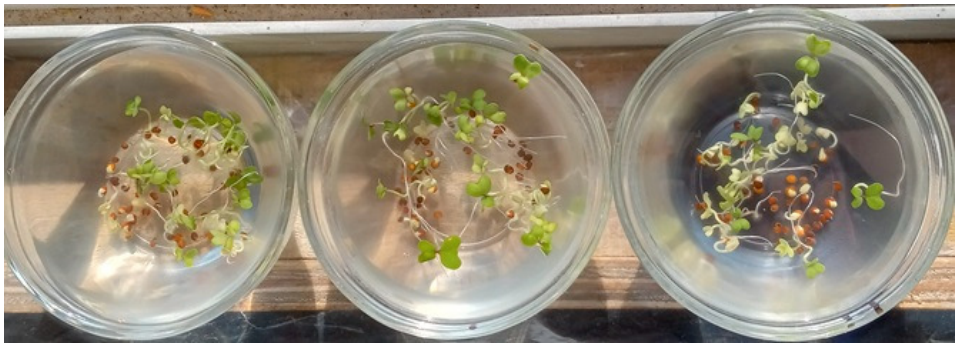
Day 9:



Day 10:

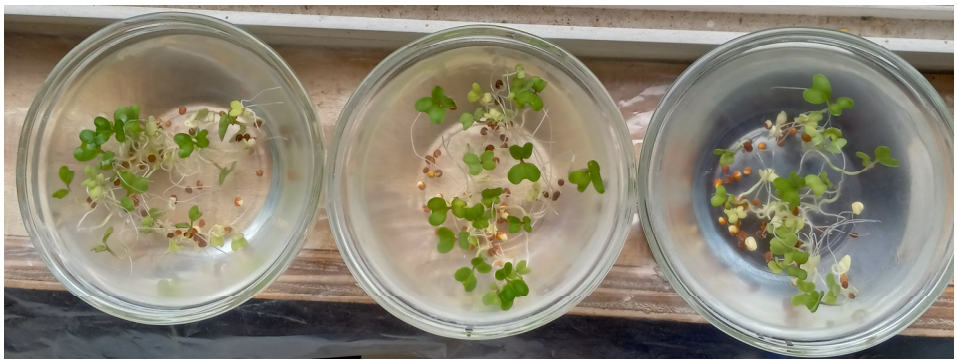


Day 11: X > T > M, M evap > T evap > X evap



Day 12:

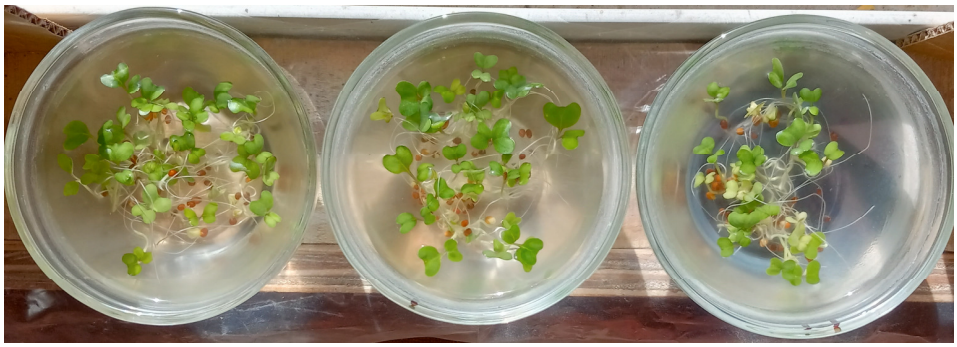
Day 13:



Day 14:

Day 15:

Day 16: On this day water in T evaporated the most.



Day 17:

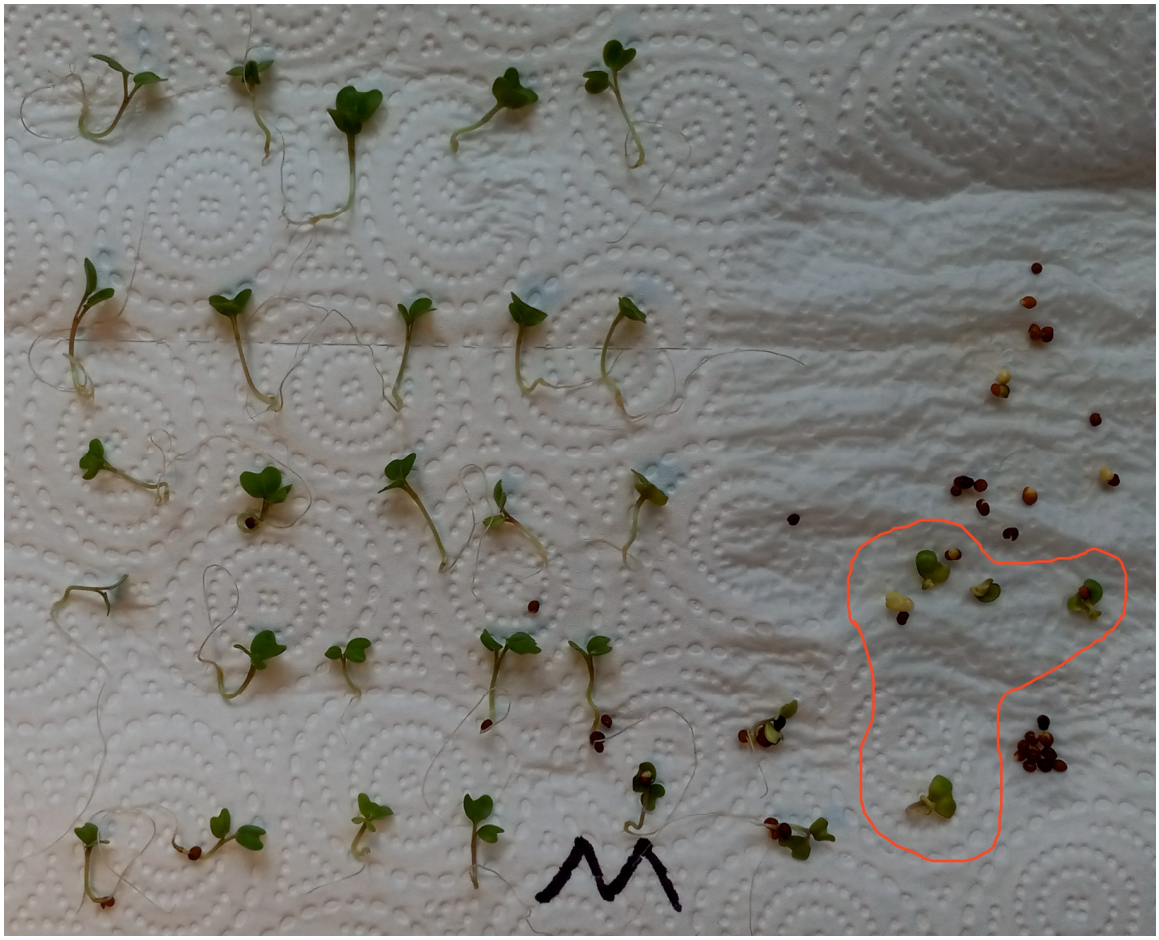
Day 18: Final day. I was going to wait 25 days because that is how long the last broccoli seed experiment took and I wanted to compare the untreated controls (X) of both experiments under similar growing conditions. However, since the amount of sunlight was different due to longer days plus there being no cold snap, it seemed like the conditions wouldn't be similar anyway. Besides, the water started turning cloudy, so I harvested them on Day 18.

The tallies are shown below. It was more difficult to get an accurate count of Full Sprouts and Baby Sprouts. Full Sprouts (FulS) were deemed as any that had 2 leaves and a root. Baby Sprouts (BabS) as anything less than that, but not including seeds that were green with no leaves nor roots.
BabS were **circled in red** on the images below.

X = 31 FulS, 7 BabS, 38 Total. (6 green seeds above red circle were borderline, thus not included).

T = 26 FulS, 6 BabS, 32 Total. (No green seeds).

M = 27 FulS, 5 BabS, 32 Total. (2 questionable green seeds, not counted).



Final Tally:

BROCCOLI SEED EXPERIMENT 2				
	Full Sprouts	**Baby Sprouts**	**Unsprouted**	**Total**
Untreated (X)	31	7	12	50
Treated (T)	26	6	22	50
Magnet(M)	27	5	22	50

We are going to statistically compare:

1. T compared to X, should have statistically significant difference – something happened.
2. M compared to X, should have statistically significant difference – something happened.
3. T compared to M, statistically significant difference or similar?
4. M + T compared to X, should have statistically significant difference – something happened.
5. X from 1st Broccoli Seed experiment (X1) compared to X, should be similar.
6. T from 1st Broccoli Seed experiment (T1) compared to T, should be similar.
7. X + X1 compared to T + T1, meta-analysis of untreated controls against those treated by me should have statistically significant difference – something happened.
8. X + X1 compared to T + T1 + M, meta-analysis of untreated controls against all treated should have statistically significant difference – something happened.

1. T compared to X, something happened, but unfortunately it was not statistically significant. The p value should be less than 0.05 ($p < 0.05$) for FDA approval. But don't despair, all is not lost:

	Full Sprouts	Other	Total		
Untreated (X)	31	19	50		
Treated (T)	26	24	50		
Total	57	43	100		
	expected				
	28.50	21.50			
	28.50	21.50			
	(O-E)^2/E				
	0.22	0.29	X^2 =	1.02	
	0.22	0.29	p value =	0.313	

	Total Sprouts	Unsprouted	Total	
Untreated (X)	38	12	50	
Treated (T)	32	18	50	
Total	70	30	100	
	expected			
	35.00	15.00		
	35.00	15.00		
	(O-E)^2/E			
	0.26	0.60	X^2 =	1.71
	0.26	0.60	p value =	0.190

2. M compared to X, something happened, but unfortunately it was not statistically significant either:

	Full Sprouts	Other	Total		
Untreated (X)	31	19	50		
Magnet(M)	27	23	50		
Total	58	42	100		
	expected				
	29.00	21.00			
	29.00	21.00			
	(O-E)^2/E				
	0.14	0.19	X^2 =	0.66	
	0.14	0.19	p value =	0.418	

	Total Sprouts	Unsprouted	Total	
Untreated (X)	38	12	50	
Magnet(M)	32	18	50	
Total	70	30	100	
	expected			
	35.00	15.00		
	35.00	15.00		
	(O-E)^2/E			
	0.26	0.60	X^2 =	1.71
	0.26	0.60	p value =	0.190

3. T compared to M. p value close to 1.00 shows that they are very similar:

	Full Sprouts	Other	Total		
Treated (M)	26	24	50		
Treated (T)	27	23	50		
Total	53	47	100		
	expected				
	26.50	23.50			
	26.50	23.50			
	(O-E)^2/E				
	0.01	0.01	X^2 =	0.04	
	0.01	0.01	p value =	0.841	

	Total Sprouts	Unsprouted	Total	
Treated (M)	32	18	50	
Treated (T)	32	18	50	
Total	64	36	100	
	expected			
	32.00	18.00		
	32.00	18.00		
	(O-E)^2/E			
	-	-	X^2 =	-
	-	-	p value =	1.000

4. M + T compared to X, something happened, it's not statistically significant, but is getting closer:

	Full Sprouts	Other	Total		
Untreated (X)	31	19	50		
T + M	53	47	100		
Total	84	66	150		
	expected				
	28.00	22.00			
	56.00	44.00			
	(O-E)^2/E				
	0.32	0.41	X^2 =	1.10	
	0.16	0.20	p value =	0.295	

	Total Sprouts	Unsprouted	Total	
Untreated (X)	38	12	50	
T + M	64	36	100	
Total	102	48	150	
	expected			
	34.00	16.00		
	68.00	32.00		
	(O-E)^2/E			
	0.47	1.00	X^2 =	2.21
	0.24	0.50	p value =	0.137

5. X from 1st Broccoli Seed experiment (X1) compared to X, high p value shows that the controls are similar, even though they had different growing conditions: 25 days vs 18 days, sunlight, cold snap.

	Full Sprouts	Baby Sprouts	Unsprouted	Total
Untreated (X1)	33	6	11	50
Treated (T1)	22	8	22	52

	Full Sprouts	Other	Total	
Untreated (X1)	33	17	50	
Untreated (X)	31	19	50	
Total	64	36	100	
	expected			
	32.00	18.00		
	32.00	18.00		
	(O-E)^2/E			
	0.03	0.06	X^2 =	0.17
	0.03	0.06	p value =	0.677

	Total Sprouts	Unsprouted	Total	
Untreated (X1)	39	11	50	
Untreated (X)	38	12	50	
Total	77	23	100	
	expected			
	38.50	11.50		
	38.50	11.50		
	(O-E)^2/E			
	0.01	0.02	X^2 =	0.06
	0.01	0.02	p value =	0.812

6. T from 1st Broccoli Seed experiment (T1) compared to T, high p value shows that the seeds I treated are similar, even though they had different growing conditions: 25 days vs 18 days, sunlight, cold snap:

	Full Sprouts	Other	Total	
Treated (T1)	22	30	52	
Treated (T)	26	24	50	
Total	48	54	102	
	expected			
	24.47	27.53		
	23.53	26.47		
	(O-E)^2/E			
	0.25	0.22	X^2 =	0.96
	0.26	0.23	p value =	0.327

	Total Sprouts	Unsprouted	Total	
Treated (T1)	30	22	52	
Treated (T)	32	18	50	
Total	62	40	102	
	expected			
	31.61	20.39		
	30.39	19.61		
	(O-E)^2/E			
	0.08	0.13	X^2 =	0.43
	0.09	0.13	p value =	0.514

7. X + X1 compared to T + T1, meta-analysis of untreated controls against those treated by me: $p < 0.02$, **we got statistical significance:**

	Full Sprouts	Other	Total	
X1 + X	64	36	100	
T1 + T	48	54	102	
Total	112	90	202	
	expected			
	55.45	44.55		
	56.55	45.45		
	(O-E)^2/E			
	1.32	1.64	X^2 =	5.87
	1.29	1.61	p value =	0.015

	Total Sprouts	Unsprouted	Total	
X1 + X	77	23	100	
T1 + T	62	40	102	
Total	139	63	202	
	expected			
	68.81	31.19		
	70.19	31.81		
	(O-E)^2/E			
	0.97	2.15	X^2 =	6.19
	0.96	2.11	p value =	0.013

8. X + X1 compared to T + T1 + M, meta-analysis of untreated controls against all treated
we got statistical significance:

	Full Sprouts	Other	Total	
X1 + X	64	36	100	
T1 + T + M	75	77	152	
Total	139	113	252	
	expected			
	55.16	44.84		
	83.84	68.16		
	(O-E)^2/E			
	1.42	1.74	X^2 =	5.24
	0.93	1.15	p value =	0.022

	Total Sprouts	Unsprouted	Total	
X1 + X	77	23	100	
T1 + T + M	94	58	152	
Total	171	81	252	
	expected			
	67.86	32.14		
	103.14	48.86		
	(O-E)^2/E			
	1.23	2.60	X^2 =	6.35
	0.81	1.71	p value =	0.012

Discussion:

Although this particular experiment did not show significant results for the seeds that I treated (T) and the seeds that sat on the magnet (M), they were in the right direction. We were able to show that untreated controls (X and X1) from both broccoli seed experiments were similar, which suggests that seed growth does not vary naturally. Also the treated seeds (T and T1) were similar. If they had varied greatly that would put a damper on our theory that intention can influence the growth of seeds, especially if T1 showed an inhibiting effect on the growth of the seeds, while T would show an enhanced effect. We also theorized that since T1 showed an inhibiting effect and Kayna's experiment with a magnet showed an inhibiting effect, that T should show an inhibiting effect. And that is exactly what happened. This also successfully replicated Kayna's experiment with the magnet. Finally, combining both experiments we get statistically significant results that my seeds treated by intention (T and T1) and the seeds sitting on the magnet (M) both inhibited the growth of the seeds compared to the controls (X and X1).

To sum up:

- Seed growth does not vary much naturally.
- All treated seeds showed similar inhibiting effect on growth.
- Kayna's experiment with the magnets was replicated.
- Magnets and treatment have similar inhibiting effect on growth.
- Combining experiments show statistically significant results.

And so we plan to continue the broccoli seeds experiments with different variations.