

Release Notes 2022-01-05 : :

Kind of dissapointing but maybe some improvement seen.

Note that any item given to a non-human must be checked for safety alone and in combination with other ingredients or medicines for that animal. Animals including dogs and cats have decreased tolerance for many common ingredients in things meant for human consumption.

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No improvement in cataracts with diet

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This work describes the case of Sera and an attempt to improve her lens opacity. While there was no obvious improvement in her ability to see, her blood sugar may have improved and there may have been some improved response to light. The literature on cataracts and pupillary light reflex is discussed along with nutrient contributions to cataract. As the eye lens is sensitive to protein quality, it makes a good example of a possible larger problem with protein quality elsewhere and its changes with aging and diet for fixed genetics.

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1. INTRODUCTION

Eye lens transparency is sensitive to protein quality and there was some hope that dietary interventions could help Sera's eyesight. It is not clear what if any improvement was obtained although her appetite and blood sugar may have improved.

2. DESCRIPTION

Sera arrived here on 2021-03-26 and was only notable for opaque eyes, see left image in Fig. 1, and lack of interest in food. As described later, there was some hope that the cataracts related to a nutrient deficiency and if her appetite corrected then her eyes may eventually improve too. She was fed with other dogs here using the snacks described previously [9] with food intake and outcomes recorded in MUQED format [11]. She was found to eat better with added colostrum. Her colostrum consumption, shown in Fig. 3, is a general indicator of how picky she was. By mid October she had been weaned off of that and was eating pretty consistently until a day or so before she left. Despite her lack of interest in most food, with effort she would eat the snacks most of the time. Her tryptophan consumption is shown in Fig. 4 which is a reasonable marker for her overall snack consumption. Periods of zero reflect either rotation of some nutrients or times when I was away. Tryptophan was given almost everyday as opposed to some other nutrients. With the concern about her leaving, some of her vitamins were doubled in the last few days. Other nutrients possibly linked to cataracts such as histidine [19] were varied as in Fig. 5.

Observations were recorded sporadically and copied verbatim from the MUQED data into Appendix C. She left 2021-12-29 in with about the same condition as when she arrived although with some indication of more consistent appetite until the day before she left and maybe better pupil diameter reduction in the sunlight. Her eyes are seen in full sun on the right in Fig. 1 with a closeup in Fig. 2. After arriving in Florida, she was taken to a vet who produced the follow up blood work which is compared to her earlier work before her arrival in Table I.



FIG. 1: Eyes constricting in sun. Left, 2021-04-11 in dimmer light while right is 2021-12-19 in morning full sun. While this fluctuated greatly and light varied she was responding well when she left.

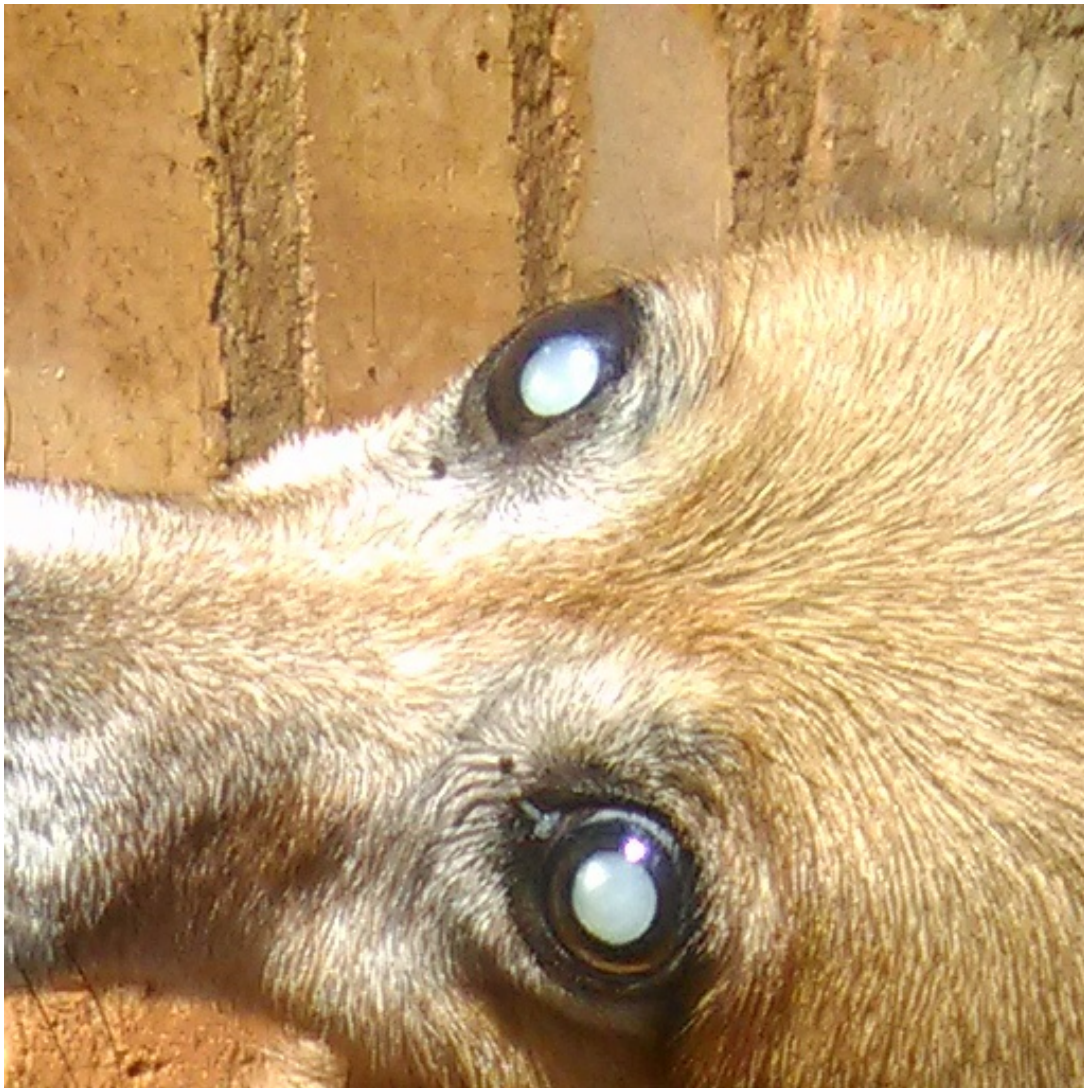


FIG. 2: Pupils constricting in sun, close up, 2021-12-19.

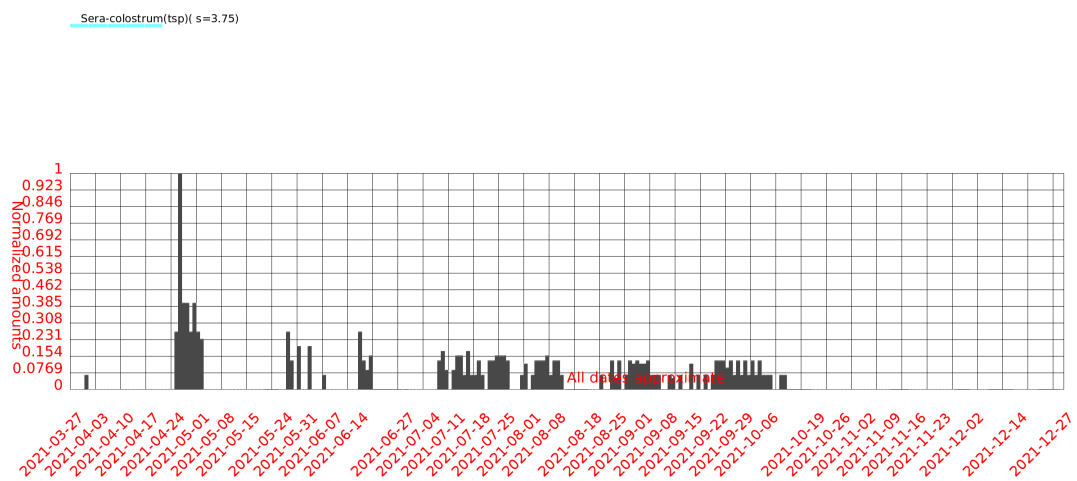


FIG. 3: Colostrum was given when she did not eat well and was used less as she gained appetite.

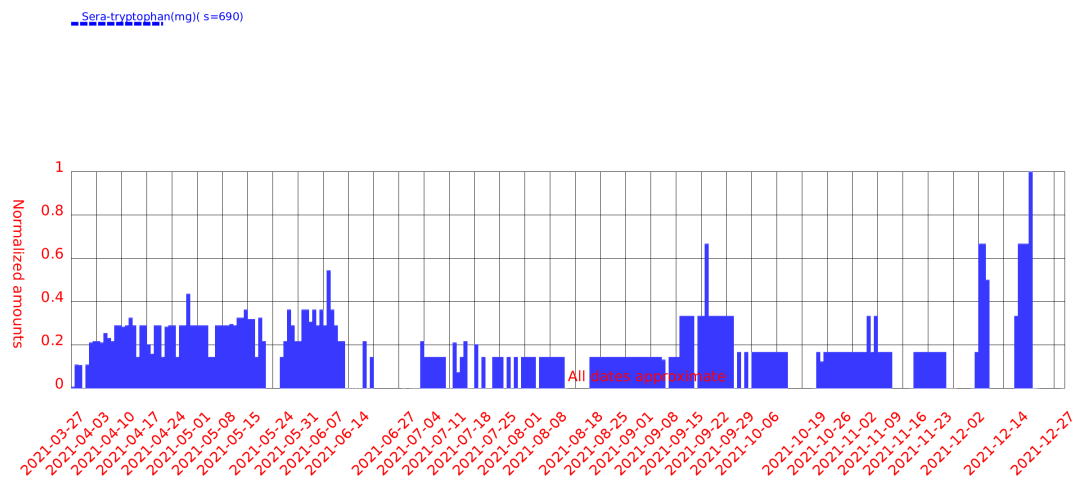


FIG. 4: Tryptophan was one of many nutrients thought to be an issue with cataracts. Increasing the doses near the end but less consistently as I was gone more often.

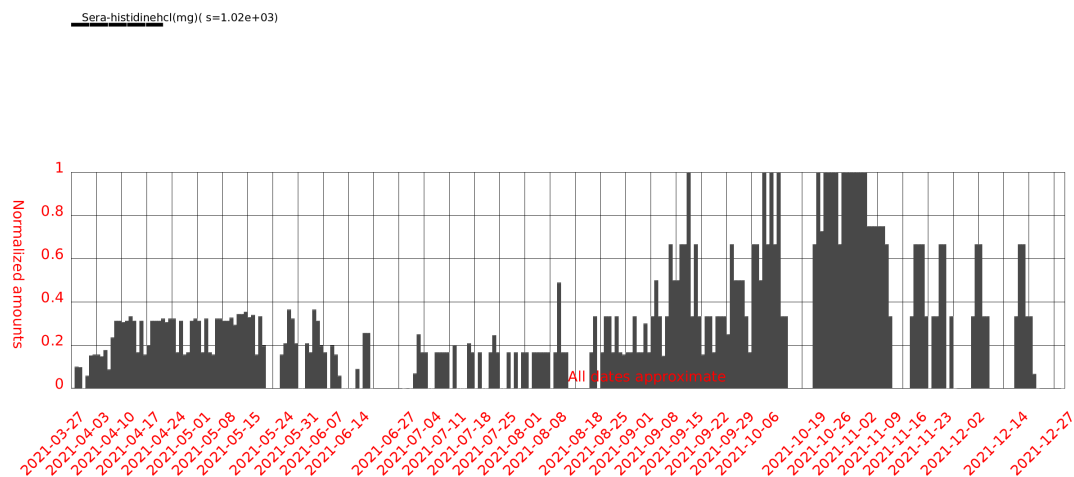


FIG. 5: Histidine has been considered a possible issue with lens quality. See the more complete list of her monthly nutrient intake in Appendix D

Sera Selected Blood Levels			
Date	Test	Value (ref range)	Graphic vs Ref Levels
2021-03-24	total protein	7.8g/dl (5.2-8.2)	— —
2021-12-24	total protein	7.2g/dl (5-7.4)	— —
2021-03-24	albumin	4.2g/dl (2.2-3.9)	— —
2021-12-24	albumin	3.7g/dl (2.7-4.4)	— —
2021-03-24	BUN	13mg/dL (7-27)	— —
2021-12-24	BUN	28mg/dL (6-31)	— —
2021-03-24	Creatinine	.8mg/dL (.5-1.8)	— —
2021-12-24	Creatinine	.9mg/dL (.5-1.6)	— —
2021-03-24	Glucose	168mg/dL (70-143)	— —
2021-12-24	Glucose	92mg/dL (70-138)	— —
2021-12-24	HCT	58 (36-60)	— —
2021-12-24	Urine Protein	TRACE	

TABLE I: A comparison of interesting blood values. Her blood sugar and albumin may have corrected although details of her overall state are not well known in either case and in the latter test she was likely not eating or drinking well.

3. DISCUSSION

Sera had two problems that were thought to be related: reluctance to eat and opaque eye lenses. It is difficult to determine roles for genetics and age but since she could see earlier there was some hope that a digestive issue created a nutritional problem that prevented previously working genetics from keeping her eyes clear. It does appear her eating and blood sugar may have improved although only inconsistent signs were observed of lens quality improving.

In retrospect again, the notes are inadequate to find possible patterns in her appetite or pupillary constriction. Pupillary constriction is a part of accommodation [12] [7] to changing scene characteristics with constriction being mostly related to light level. It is not likely she could see well enough to judge distance although lens mechanical properties were likely impaired. Sophisticated variants of this approach exist, such as pupillary light reflex or PLR [5], and it may have been worthwhile to devise better at-home methods with controlled light and photography to record eye response regularly. The pupil constriction test was based on exposure to sunlight which fluctuates significantly and the observed response was subjective although a trend toward a more responsive right eye was noted. After doubling her portions a few days before leaving, she did seem to improve although she stopped eating a day or two before departing and there was not time to verify a consistent improvement.

The literature on nutritional aspects of cataracts is helpful for finding candidate dietary supplements. Significant literature exists relating cataracts to many nutrients [2] including trendy antioxidants [14] [15], riboflavin [16] and amino acids [20]. Some factors like antioxidants and glycemic control try to limit damage to lens proteins. Hyperglycemia is well accepted as a risk factor for cataracts with literature going back many decades [3] [18] with effects of lens protein glycation still being explored [1]. In type II diabetes, glycemic control per se appears to be a large risk factor [4]. Many mechanisms contribute including the polyol pathway, osmotic and oxidative stress, and autoimmunity especially in response to insulin in the case of diabetes [6].

One interesting case report documented transient cataracts during rapid glycemic control [13]. As Sera had opaque lenses, reversing the damage is the immediate focus and a transient problem may suggest ways of doing that. In reality, the two processes occur together and hope is to get net repair between reduced damage and increased turnover. But ultimately these point to understanding diet and protein quality. While many mechanisms contribute, ultimately cataracts relate to disruption of the protein fibers in the lens with most work focusing on modifications to crystallins [21]. The eye may be particularly sensitive to protein turnover as it is hostage to amino acid photochemistry and limited cycling ability [17]. One desirable goal for Sera's diet is to speed up protein turnover in the eye hoping that the opaque material could be removed and replaced with better quality material.

The blood tests before and after Sera's stay here are encouraging but must be considered with care. Reduced glucose suggests at least one source of damage may have been controlled but little can be said about protein turnover. Her blood test after departure may have occurred in a less well fed state with possible dehydration which may explain the elevated BUN and good hematocrit. However, her glucose and albumin both returned to normal range. As elaborated above, high blood sugar per se is considered a source of protein damage and cataracts in particular. Any meaningful reduction would be suggestive of some progress. Protein and amino acid regulation is complicated. Sources into the blood include the GI tract or muscles and consumption may be increased in response to various stresses [10] [8]. Blood quantities likely reflect pure and damaged proteins: both those damaged during circulation and those that were translated incorrectly. Faster protein turnover may be a benefit generally to replacing damaged products including those in the eye lens. While the higher BUN may be consistent with that, it is too ambiguous to consider.

It is not clear why her appetite decreased just prior to leaving although one other dog here had a similar issue at about the same time.

4. CONCLUSIONS

While Sera has left and is essentially lost to follow up, there is some indication that the mix of food items helped her digestive system. It remains unknown if that would have been sufficient to eventually restore some lens quality. Her improved appetite and reduced blood sugar are good signs even if she had not eaten much prior to her last blood test.

5. SUPPLEMENTAL INFORMATION

5.1. Computer Code

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1. Pubmed eutils facilities and the basic research it provides.
2. Free software including Linux, R, LaTeX etc.
3. Thanks everyone who contributed incidental support.

Appendix A: Statement of Conflicts

No specific funding was used in this effort and there are no relationships with others that could create a conflict of interest. I would like to develop these ideas further and have obvious bias towards making them appear successful. Barbara Cade, the dog owner, has worked in the pet food industry but this does not likely create a conflict. We have no interest in the makers of any of the products named in this work.

Appendix B: About the Authors and Facility

This work was performed at a dog rescue run by Barbara Cade and housed in rural Georgia. The author of this report ,Mike Marchywka, has a background in electrical engineering and has done extensive research using free online literature sources. I hope to find additional people interested in critically examining the results and verify that they can be reproduced effectively to treat other dogs.

Appendix C: MUQED Notes

As usual, the notes are too sprse to be helpful but fwiw.

Daily Observations	
2021-03-26	good in car until sat on driveway and she took off for creek and bit me. Will not eat much although had nibbles of the snack but refused to eat larger pieces of it
2021-03-29	picky about water content of food.
2021-03-30	eating formula and colostrum now Barb got her some chicken and pumpking stuff.
2021-04-02	drank the vitamins for evening snack without spices or foods. Lecithin did not dissolve so she did not eat it but got all else.
2021-04-02	finally ate after 2 good poops. Harder time getting her to eat PM although apparently after she ate food setting out all night. Barb said she had runny poop though prior to that.
2021-04-15	circa 0700AM huddled by gate wanting to go back to backroom, finally went through open gate and seems to be navigating better. May be seeing better but feels better
2021-04-19	navigating ok through gate etc but did not see step from top and ran into table leg at pretty high speed. Seems to be gaining confidence however. Eyes may be more grey than white or yellow now hard to tell with reflections though.
2021-04-25	not eating but likes colostrum did not eat dinner
2021-05-01	SERMSNACK has been missing lecithin for quite a while now
2021-05-05	eating nothing AM ate well PM think everyone is in need of arginine vs lysine.
2021-05-06	eating better without PC or vegetables or meat just canned chicken dog food.
2021-05-09	out eating with everyone this AM. Had food on floor ate like the others. Getting around well but unable to tell if she sees much. Looks like navigating mostly
2021-05-25	NOTE Brownie likely vomit on deck and probably Sera too
2021-05-25	likely vomit on couch and probably Brownie too
2021-05-29	sick last night, may be argininehcl, multiB, or Ken giving them garbage to eat yesterday.
2021-07-07	panting a bit and very excited suspect folic acid , went on walk yesterday. Can not tell how well she sees but seems to be trying out her eyes. Runs into things, still a grey white with little response except to bright sunlight, but may be slightly better at seeing now.
2021-07-28	seems to be eating better now with Zn and vitamins everyday
2021-07-30	despite hesitancy earlier, ate better evening suspect vitamin A or Zn. Her eyes have not been reacting to sunlight at all last day or two and no ring around periphery not a good sign.
2021-08-07	seems to eat better with egg and methionine etc or colostrum.
2021-08-20	may have blinked and good contraction in AM sun yesterday but did not repeat later. She may run around more when slight improvement but not good enough for navigation yet.
2021-08-24	eyes may have constricted on walk evening although direct sun on her side or back.
2021-08-25	NOTE Spicey coughing a bit today PM but ate well once she got started. Sleepy AM . Suspect vitamin D although Sera and Beauty were coughing but sounded like gagging.
2021-08-25	AM ate better when I set bowl down and left. Was wandering around a bit under tables and chairs maybe can see a little.
2021-09-03	eyes contracting better in bright sun, still not consistent but seems more frequent. Suspect Mn may help and other stuff.
2021-09-05	very bad about eating although eyes contract well in light and may be avoiding some objects. Ate most of dinner after walk and rest with some prompting.
2021-09-10	picky again but eyes contacted AM and blinking more in light.
2021-10-05	ate with everyone PM getting around good acting like she can almost see but runs into a lot of things and does not want to go far on walk. Probably just memory and audio cues as eyes still fully dilated most of the time.
2021-10-11	yesterday eyes appeared to constrict more and direct sun in normal light outside.
2021-11-04	eating well but does not like to go far on walks. Eyes no real changes, some light response
2021-12-05	seems more adventurous, give more pantothenate/trp
2021-12-15	can't find ring around eyes probably worse around periphery although she is eager to eat and getting around well apparently on non-visual info
2021-12-20	left this AM with Rose for South Beach FL. Seemed to have eyes contracting a bit in sun in last photo before she left. Had a carrot but refused snack, worried about her stomach. Found old blood work with high blood sugar and protein. Looked happy in liberty jeep

TABLE II:

Appendix D: Monthly Supplement Summary

Name	2021-02 Feb	2021-03 March	2021-04 April	2021-05 May	2021-06 June
FOOD					
KCl(tsp kcl)		0.041 ;0.031;4/5	0.083 ;0.062;28/30	0.04 ;0.062;19/27	0.075 ;0.032;20/21
b10ngnc ^(c)			1.1 ;1;13/30	0.064 ;1;6/27	1.7 ;1;14/21
b15ngnc ^(c)					
b20ngnc ^(c)					0.25 ;1;2/21
b7ngnc ^(c)		0.83 ;1;4/5	1.4 ;1;17/30	0.48 ;1;12/27	0.23 ;1;6/21
canned					
carrot		0.28 ;1;4/5	2 ;1;30/30	1.8 ;1;25/27	2 ;1;20/21
cbbroth		0.48 ;1;4/5	2.5 ;1;30/30	0.77 ;1;20/27	2.6 ;1;20/21
citrate(tsp citrate)		0.035 ;0.023;4/5	0.083 ;0.062;28/30	0.041 ;0.062;20/27	0.075 ;0.032;20/21
colostrum(tsp)		0.05 ;0.25;1/5	0.34 ;1;6/30	0.15 ;0.5;5/27	0.16 ;0.5;6/21
colostrum		0.35 ;1;1/5	0.1 ;0.75;2/30		
ctbrothbs		0.35 ;1;2/5	0.19 ;1;4/30		0.11 ;1;2/21
eggo3		0.013 ;0.031;3/5	0.084 ;0.15;30/30	0.057 ;0.5;18/27	0.047 ;0.062;15/21
garlic			0.37 ;1;5/30	0.24 ;1;18/27	0.12 ;1;8/21
oliveoil(tsp)					
salmon			0.44 ;1;8/30	0.081 ;1;3/27	
shrimp(grams)		1.9 ;1.8;4/5	7.1 ;15;25/30	10 ;10;26/27	10 ;10;19/21
spinach		2.00e-03 ;0.01;1/5	1.3 ;1;20/30	1.8 ;1;25/27	2 ;1;20/21
tuna(oz)		0.24 ;0.2;3/5	0.049 ;0.5;4/30		
VITAMIN					
B-1(mg)			1.7 ;25;1/30	6.5 ;50;6/27	4.5 ;40;3/21
B-100(count)		9.00e-03 ;0.022;1/5	0.04 ;0.25;6/30	0.063 ;0.25;7/27	
B-12(mg)			0.017 ;0.25;2/30	0.049 ;0.5;3/27	0.065 ;0.5;3/21
B-2(mg)				27 ;50;12/27	25 ;50;14/21
B-3(mg)		1.8 ;3.6;1/5	14 ;70;9/30	45 ;70;16/27	50 ;70;14/21
B-6(mg)					1.2 ;25;1/21
B-multi(count)				0.032 ;0.25;3/27	0.15 ;0.5;10/21
Cu(mg)		0.65 ;1;2/5	0.51 ;1;15/30	0.52 ;1;11/27	0.48 ;1;9/21
D-3(iu)		3.1 ;16;1/5	43 ;225;9/30	77 ;400;8/27	69 ;500;5/21
Iodine(mg) ^(a)		3.33e-03 ;0.017;1/5	0.037 ;0.25;5/30	0.03 ;0.25;3/27	0.039 ;0.5;2/21
K1(mg)		2.5 ;2.5;4/5	7.8 ;5;29/30	7.4 ;5;24/27	5.6 ;5;19/21
K2(mg)			1.2 ;10;4/30	1.1 ;7.6;4/27	0.36 ;7.5;1/21
Mg(mg)		23 ;24;3/5	89 ;200;28/30	107 ;100;26/27	106 ;100;18/21
Mn(mg)					
Se(mcg)					
Se(tsp)					
arginine(mg)		38 ;48;2/5	128 ;200;21/30	209 ;200;25/27	272 ;375;19/21
arginine(tsp)		0.025 ;0.062;1/5	9.37e-03 ;0.12;4/30		
biotin(mg) ^(a)		0.8 ;2.5;2/5	4.3 ;15;18/30	2.6 ;10;13/27	3.5 ;10;13/21
folate(mg)				0.019 ;0.25;2/27	0.18 ;0.5;9/21
histidinehcl(mg)		53 ;80;4/5	255 ;170;30/30	261 ;170;25/27	112 ;170;12/21
histidinehcl(tsp)		3.13e-03 ;0.016;1/5	8.33e-03 ;0.031;5/30		
isoleucine(mg)		10 ;50;1/5	48 ;200;8/30	70 ;200;8/27	93 ;200;8/21
lecithin(lec)		341 ;300;4/5	78 ;1200;2/30		
lecithin(mg)			867 ;900;28/30	1306 ;900;27/27	1263 ;900;20/21
leucine(mg)		34 ;39;3/5	134 ;160;26/30	156 ;160;22/27	192 ;160;16/21
lipoicacid(mg) ^(a)		0.9 ;3;1/5	4.8 ;15;19/30	3.6 ;15;7/27	4.6 ;20;7/21
lysinehcl(mg)		135 ;160;4/5	616 ;320;30/30	600 ;320;25/27	669 ;320;20/21
lysinehcl(tsp)		0.056 ;0.094;1/5	5.21e-03 ;0.062;3/30		

TABLE III: Part 1 of 2. Events Summary for Sera from 2021-02-08 to 2021-12-30A summary of most dietary components and events for selected months between 2021-02-08and 2021-12-30. Format is average daily amount ;maximum; days given/ days in interval . Units are arbitrary except where noted. Any superscripts are defined as follows: **a)** SMVT substrate. Biotin, Pantothenate, Lipoic Acid, and Iodine known to compete..**c)** hamburger with varying fat percentages- 7,10,15,20, etc. ..

Name	2021-02 Feb	2021-03 March	2021-04 April	2021-05 May	2021-06 June
methionine(mg)		14 ;15;3/5	17 ;60;11/30	35 ;60;14/27	30 ;60;8/21
pantothenate(mg) ^(a)		7.2 ;31;2/5	242 ;250;27/30	196 ;300;18/27	153 ;250;13/21
phenylalanine(mg)		29 ;30;3/5	102 ;125;29/30	133 ;120;27/27	86 ;120;13/21
taurine(mg)		571 ;675;5/5	2520 ;900;30/30	2540 ;1200;27/27	2409 ;900;20/21
threonine(mg)		83 ;162;5/5	776 ;325;30/30	584 ;320;27/27	516 ;320;20/21
tryptophan(mg)		46 ;75;4/5	178 ;100;30/30	189 ;100;27/27	118 ;200;12/21
tryptophan(tsp)			1.04e-03 ;0.031;1/30		
tyrosine(mg)		61 ;50;4/5	158 ;100;30/30	207 ;410;27/27	111 ;100;13/21
tyrosine(tsp)			3.26e-03 ;0.067;2/30		
valine(mg)		56 ;100;3/5	130 ;200;21/30	153 ;200;19/27	176 ;200;14/21
valine(tsp)			1.04e-03 ;0.031;1/30		
vitamina(iu)		1870 ;3000;4/5	3154 ;6000;16/30	4394 ;9000;13/27	4286 ;9000;9/21
vitaminc(mg)		0.6 ;3;1/5	9.9 ;54;8/30	15 ;60;7/27	30 ;60;9/21
zn(mg zn)		7.3 ;12;4/5	10 ;23;18/30	13 ;23;13/27	9.2 ;23;8/21
MEDICINE					
Ivermectin			0.033 ;1;1/30		0.048 ;1;1/21
swings				0.15 ;1;2/27	
thgland(capsule)					0.012 ;0.25;1/21
thgland(tsp)				3.47e-03 ;0.031;3/27	
RESULT					
vomit				0.037 ;1;1/27	
labresult					

TABLE IV: Part 2 of 2. Events Summary for Sera from 2021-02-08 to 2021-12-30A summary of most dietary components and events for selected months between 2021-02-08and 2021-12-30. Format is average daily amount ;maximum; days given/ days in interval . Units are arbitrary except where noted. Any superscripts are defined as follows: **a)** SMVT substrate. Biotin, Pantothenate, Lipoic Acid, and Iodine known to compete..**c)** hamburger with varying fat percentages- 7,10,15,20, etc. ..

Name	2021-07 July	2021-08 Aug	2021-09 Sept	2021-10 Oct	2021-11 Nov
FOOD					
KCl(tsp kcl)	0.13 ;0.062;31/31	0.099 ;0.062;21/25	0.021 ;0.062;11/30	0.063 ;0.046;24/24	0.077 ;0.037;22/22
b10ngnc ^(c)	0.97 ;1;13/31	0.84 ;1;11/25	0.27 ;1;4/30	0.21 ;1;4/24	0.14 ;1;2/22
b15ngnc ^(c)	0.065 ;1;1/31	0.44 ;1;6/25		0.57 ;1;10/24	1.3 ;1;16/22
b20ngnc ^(c)			0.3 ;1;6/30	0.17 ;1;3/24	
b7ngnc ^(c)	1.2 ;1;19/31	0.64 ;1;9/25	0.84 ;1;14/30	0.9 ;1;12/24	0.41 ;1;5/22
canned					0.023 ;0.25;2/22
carrot	2.1 ;1;31/31	1.9 ;1;24/25	1.6 ;1;27/30	1.8 ;1;24/24	1.9 ;1;22/22
cbbroth	2.3 ;1;31/31	1.9 ;1;24/25	2.4 ;1;29/30	0.51 ;1;10/24	0.11 ;0.5;3/22
citrate(tsp citrate)	0.13 ;0.062;31/31	0.12 ;0.062;24/25	0.028 ;0.062;14/30	0.063 ;0.046;24/24	0.077 ;0.037;22/22
colostrum(tsp)	0.29 ;0.5;20/31	0.28 ;0.33;17/25	0.26 ;0.25;22/30	0.11 ;0.25;9/24	
colostrum					
ctbrothbs			0.17 ;1;5/30	2 ;1;23/24	1.9 ;1;22/22
eggo3	0.086 ;0.23;27/31	0.048 ;0.1;23/25	0.029 ;0.05;18/30	0.035 ;0.092;16/24	0.048 ;0.12;15/22
garlic	0.79 ;1;22/31	1.1 ;1;19/25	0.53 ;1;13/30	0.51 ;1;12/24	0.65 ;1;12/22
oliveoil(tsp)		5.00e-03 ;0.062;2/25	0.077 ;0.12;17/30	5.21e-03 ;0.12;1/24	
salmon	0.11 ;1;8/31		0.083 ;1;3/30	0.05 ;1;2/24	0.1 ;1;3/22
shrimp(grams)	11 ;13;29/31	9.9 ;16;23/25	4.9 ;16;16/30	10 ;20;22/24	16 ;20;19/22
spinach	2.1 ;1;31/31	1.9 ;1;24/25	1.6 ;1;27/30	1.8 ;1;23/24	1.9 ;1;22/22
tuna(oz)		0.016 ;0.1;2/25	0.079 ;0.5;10/30	0.058 ;0.5;4/24	0.056 ;0.5;4/22
VITAMIN					
B-1(mg)	9 ;70;5/31	5.2 ;80;2/25	8.3 ;50;5/30	20 ;125;5/24	34 ;125;7/22
B-100(count)					
B-12(mg)	0.76 ;1;24/31	0.52 ;1;13/25	0.34 ;1;11/30	0.62 ;2;14/24	0.69 ;1;14/22
B-2(mg)	8.1 ;50;5/31	34 ;60;13/25	40 ;50;22/30	38 ;100;14/24	29 ;100;7/22
B-3(mg)	33 ;70;15/31	37 ;70;13/25	28 ;70;12/30	22 ;70;10/24	21 ;70;9/22
B-6(mg)	3.4 ;25;4/31	3 ;50;2/25	1.7 ;50;1/30	3.1 ;50;2/24	10 ;50;7/22
B-multi(count)	0.29 ;0.5;17/31	0.22 ;0.5;11/25	0.22 ;0.5;14/30	0.24 ;0.5;12/24	0.26 ;0.5;11/22
Cu(mg)	0.45 ;1;11/31	0.24 ;1;6/25	0.33 ;1;10/30	0.38 ;1;9/24	0.49 ;1.2;10/22
D-3(iu)	155 ;900;9/31	312 ;1000;9/25	213 ;800;8/30	154 ;1000;5/24	155 ;800;4/22
Iodine(mg) ^(a)	0.1 ;0.5;7/31	0.2 ;0.5;10/25	0.12 ;0.5;7/30	0.083 ;0.5;4/24	0.074 ;0.5;3/22
K1(mg)	5 ;5;28/31	4.1 ;5;20/25	4.1 ;5;25/30	3.8 ;5;18/24	4.8 ;5;20/22
K2(mg)	0.83 ;7.5;3/31	0.9 ;7.5;3/25	0.5 ;7.5;2/30	2.2 ;15;4/24	0.68 ;15;1/22
Mg(mg)	111 ;100;28/31	82 ;100;20/25	50 ;100;15/30	92 ;100;22/24	77 ;100;16/22
Mn(mg)		0.16 ;2;2/25	0.39 ;2;9/30	0.42 ;2;5/24	0.3 ;2;3/22
Se(mcg)			1.5 ;25;2/30		1.1 ;25;1/22
Se(tsp)			4.69e-04 ;0.014;1/30		
arginine(mg)	345 ;375;23/31	355 ;375;23/25	248 ;375;20/30	163 ;375;11/24	188 ;375;10/22
arginine(tsp)					
biotin(mg) ^(a)	3.1 ;5;17/31	2.2 ;5;10/25	4.7 ;10;18/30	5.9 ;10;15/24	5.3 ;10;12/22
folate(mg)	0.33 ;0.5;20/31	0.28 ;0.5;14/25	0.2 ;0.5;12/30	0.25 ;0.5;12/24	0.18 ;0.5;8/22
histidinehcl(mg)	106 ;170;18/31	196 ;170;22/25	420 ;340;30/30	810 ;340;24/24	545 ;340;19/22
histidinehcl(tsp)					
isoleucine(mg)	66 ;200;8/31	46 ;200;6/25	45 ;200;7/30	28 ;200;4/24	22 ;160;3/22
lecithin(lec)					
lecithin(mg)	968 ;900;31/31	972 ;900;24/25	790 ;450;30/30	1019 ;450;24/24	972 ;900;22/22
leucine(mg)	199 ;650;24/31	134 ;160;21/25	130 ;160;24/30	172 ;160;23/24	219 ;162;21/22
lipoicacid(mg) ^(a)	15 ;25;26/31	14 ;25;18/25	13 ;20;19/30	11 ;20;13/24	3.6 ;20;6/22
lysinehcl(mg)	505 ;1300;30/31	544 ;480;25/25	676 ;320;30/30	642 ;361;24/24	554 ;325;22/22
lysinehcl(tsp)					

TABLE V: Part 1 of 2. Events Summary for Sera from 2021-02-08 to 2021-12-30A summary of most dietary components and events for selected months between 2021-02-08and 2021-12-30. Format is average daily amount ;maximum; days given/ days in interval . Units are arbitrary except where noted. Any superscripts are defined as follows: **a)** SMVT substrate. Biotin, Pantothenate, Lipoic Acid, and Iodine known to compete..**c)** hamburger with varying fat percentages- 7,10,15,20, etc. ..

Name	2021-07 July	2021-08 Aug	2021-09 Sept	2021-10 Oct	2021-11 Nov
methionine(mg)	36 ;120;10/31	275 ;180;25/25	219 ;120;30/30	200 ;120;24/24	177 ;120;20/22
pantothenate(mg) ^(a)	128 ;250;15/31	120 ;250;12/25	125 ;250;15/30	137 ;250;12/24	135 ;312;11/22
phenylalanine(mg)	104 ;125;25/31	113 ;120;23/25	115 ;240;28/30	115 ;250;22/24	120 ;125;20/22
taurine(mg)	1883 ;900;31/31	1702 ;900;24/25	1132 ;900;30/30	1038 ;450;24/24	1033 ;900;22/22
threonine(mg)	414 ;1300;30/31	307 ;320;24/25	399 ;320;28/30	290 ;320;23/24	350 ;325;21/22
tryptophan(mg)	69 ;100;20/31	92 ;100;23/25	156 ;460;26/30	104 ;115;22/24	105 ;115;18/22
tryptophan(tsp)					
tyrosine(mg)	105 ;100;28/31	166 ;100;24/25	189 ;200;30/30	154 ;100;22/24	114 ;100;20/22
tyrosine(tsp)					
valine(mg)	155 ;200;19/31	116 ;200;14/25	112 ;200;17/30	133 ;800;13/24	118 ;200;12/22
valine(tsp)					
vitamina(iu)	5429 ;1.2e+04;14/31	6840 ;1.2e+04;17/25	5450 ;9000;18/30	4000 ;1.2e+04;10/24	4705 ;9000;11/22
vitaminc(mg)	18 ;60;9/31	14 ;60;6/25	26 ;80;12/30	16 ;80;6/24	22 ;60;8/22
zn(mg zn)	8 ;23;15/31	13 ;23;18/25	7.8 ;23;16/30	8.5 ;23;9/24	13 ;23;12/22
MEDICINE					
Ivermectin		0.04 ;1;1/25			
swings					
thgland(capsule)	0.016 ;0.5;1/31	0.02 ;0.5;1/25			
thgland(tsp)					
RESULT					
vomit					
labresult					

TABLE VI: Part 2 of 2. Events Summary for Sera from 2021-02-08 to 2021-12-30A summary of most dietary components and events for selected months between 2021-02-08and 2021-12-30. Format is average daily amount ;maximum; days given/ days in interval . Units are arbitrary except where noted. Any superscripts are defined as follows: **a)** SMVT substrate. Biotin, Pantothenate, Lipoic Acid, and Iodine known to compete..**c)** hamburger with varying fat percentages- 7,10,15,20, etc. ..

Name	2021-12 Dec
FOOD	
KCl(tsp kcl)	0.057 ;0.037;11/13
b10ngnc ^(c)	
b15ngnc ^(c)	1 ;1;7/13
b20ngnc ^(c)	
b7ngnc ^(c)	0.56 ;1;4/13
canned	
carrot	1.5 ;1;11/13
cbbroth	
citrate(tsp citrate)	0.057 ;0.037;11/13
colostrum(tsp)	
colostrum	
ctbrothbs	1.6 ;1;11/13
eggo3	0.043 ;0.15;9/13
garlic	0.4 ;1;5/13
oliveoil(tsp)	0.06 ;0.25;4/13
salmon	
shrimp(grams)	12 ;16;10/13
spinach	1.5 ;1;11/13
tuna(oz)	0.079 ;0.5;3/13
VITAMIN	
B-1(mg)	31 ;100;4/13
B-100(count)	
B-12(mg)	0.54 ;1;7/13
B-2(mg)	31 ;100;3/13
B-3(mg)	8.1 ;35;3/13
B-6(mg)	5.8 ;50;2/13
B-multi(count)	0.16 ;0.5;5/13
Cu(mg)	0.17 ;1;3/13
D-3(iu)	123 ;800;2/13
Iodine(mg) ^(a)	0.077 ;0.5;2/13
K1(mg)	4.3 ;5;11/13
K2(mg)	
Mg(mg)	73 ;100;9/13
Mn(mg)	
Se(mcg)	1.9 ;25;1/13
Se(tsp)	
arginine(mg)	274 ;750;6/13
arginine(tsp)	
biotin(mg) ^(a)	7 ;10;9/13
folate(mg)	0.24 ;0.5;6/13
histidinehcl(mg)	371 ;340;11/13
histidinehcl(tsp)	
isoleucine(mg)	37 ;320;2/13
lecithin(lec)	
lecithin(mg)	708 ;450;11/13
leucine(mg)	190 ;320;11/13
lipoicacid(mg) ^(a)	1.5 ;20;1/13
lysinehcl(mg)	526 ;650;11/13
lysinehcl(tsp)	

TABLE VII: Part 1 of 2. Events Summary for Sera from 2021-02-08 to 2021-12-30A summary of most dietary components and events for selected months between 2021-02-08and 2021-12-30. Format is average daily amount ;maximum; days given/ days in interval . Units are arbitrary except where noted. Any superscripts are defined as follows: **a)** SMVT substrate. Biotin, Pantothenate, Lipoic Acid, and Iodine known to compete..**c)** hamburger with varying fat percentages- 7,10,15,20, etc. ..

Name	2021-12 Dec
methionine(mg)	85 ;120;9/13
pantothenate(mg) ^(a)	132 ;312;6/13
phenylalanine(mg)	151 ;250;11/13
taurine(mg)	673 ;450;11/13
threonine(mg)	744 ;650;11/13
tryptophan(mg)	283 ;460;10/13
tryptophan(tsp)	
tyrosine(mg)	123 ;200;11/13
tyrosine(tsp)	
valine(mg)	177 ;400;7/13
valine(tsp)	
vitamina(iu)	3600 ;9000;6/13
vitaminc(mg)	18 ;60;4/13
zn(mg zn)	11 ;23;6/13
MEDICINE	
Ivermectin	
swings	
thgland(capsule)	
thgland(tsp)	
RESULT	
vomit	
labresult	0.077 ;1;1/13

TABLE VIII: Part 2 of 2. Events Summary for Sera from 2021-02-08 to 2021-12-30A summary of most dietary components and events for selected months between 2021-02-08and 2021-12-30. Format is average daily amount ;maximum; days given/ days in interval . Units are arbitrary except where noted. Any superscripts are defined as follows: **a)** SMVT substrate. Biotin, Pantothenate, Lipoic Acid, and Iodine known to compete..**c)** hamburger with varying fat percentages- 7,10,15,20, etc. ..

Appendix E: Symbols, Abbreviations and Colloquialisms

TERM	definition and meaning
BUN	Blood Urea Nitrogen
MUQED	Multi-Use Quantitative Event Diary
PLR	Pupillary Light Reflex

Appendix F: General caveats and disclaimer

This document was created in the hope it will be interesting to someone including me by providing information about some topic that may include personal experience or a literature review or description of a speculative theory or idea. There is no assurance that the content of this work will be useful for any particular purpose.

All statements in this document were true to the best of my knowledge at the time they were made and every attempt is made to assure they are not misleading or confusing. However, information provided by others and observations that can be manipulated by unknown causes ("gaslighting") may be misleading. Any use of this information should be preceded by validation including replication where feasible. Errors may enter into the final work at every step from conception and research to final editing.

Documents labelled "NOTES" or "not public" contain substantial informal or speculative content that may be terse and poorly edited or even sarcastic or profane. Documents labelled as "public" have generally been edited to be more coherent but probably have not been reviewed or proof read.

Generally non-public documents are labelled as such to avoid confusion and embarrassment and should be read with that understanding.

Appendix G: Citing this as a tech report or white paper

Note: This is mostly manually entered and not assured to be error free.
This is tech report MJM-2022-002.

Version	Date	Comments
0.01	2022-01-03	Create from empty.tex template
0.50	2022-01-05	First draft release
-	January 5, 2022	version 0.50 MJM-2022-002
1.0	20xx-xx-xx	First revision for distribution

Released versions,
build script needs to include empty releases.tex

Version	Date	URL
0.50	2022-01-05	https://www.researchgate.net/publication/357606003_No_improvement_in_a_dog_with_cataracts
0.50	2022-01-05	https://www.academia.edu/67290468/No_improvement_in_cataracts_with_diet

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run-date ="January 5, 2022" ,
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author ="Mike J Marchywka " ,
type ="techreport" ,
name ="marchywka-MJM-2022-002-0.50 " ,
number ="MJM-2022-002" ,
version ="0.50 " ,
institution ="not institutionalized, independent " ,
address =" 306 Charles Cox , Canton GA 30115" ,
date ="January 5, 2022" ,
startdate ="2022-01-03" ,
day ="5" ,
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year ="2022" ,
author1email ="marchywka@hotmail.com" ,
contact ="marchywka@hotmail.com" ,
author1id ="orcid.org/0000-0001-9237-455X" ,
pages =" 17"
}
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Supporting files. Note that some dates,sizes, and md5's will change as this is rebuilt.

This really needs to include the data analysis code but right now it is auto generated picking up things from prior build in many cases

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26711 Jan 3 13:49 /home/documents/latex/bib/mjm_tr.bib 869d39e01828b50e27f0b8ac5d826f55
26826 Jan 3 13:46 /home/documents/latex/bib/releases.bib 3baca6a06f1e24807d8d36a7be3526e5
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2901 Jun 17 2020 /home/documents/latex/share/includes/myskeletonpackages.tex
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