

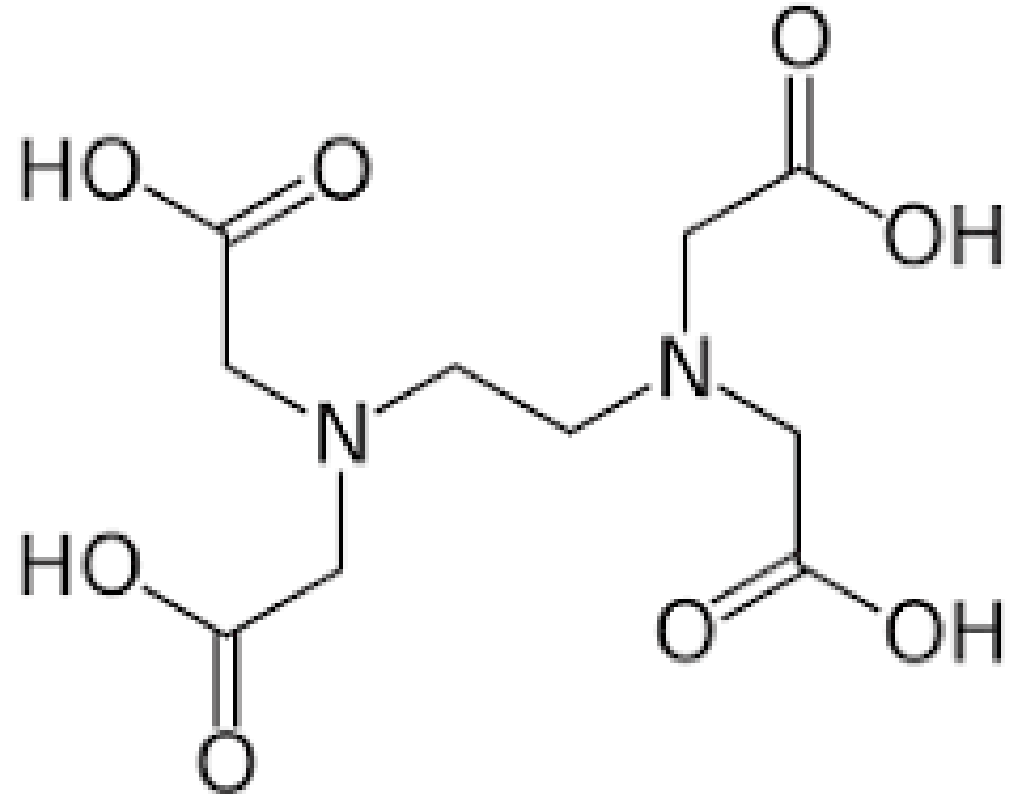


An Evaluation of Clean Label EDTA Alternatives in Emulsified Dressings

ADS TECHNICAL COMMITTEE MEETING
SUNDAY, APRIL 30, 2023

What is EDTA?

- ▶ Food additive
- ▶ Chelating agent
- ▶ Preservative; promotes stability and shelf-life in mayonnaise & salad dressings



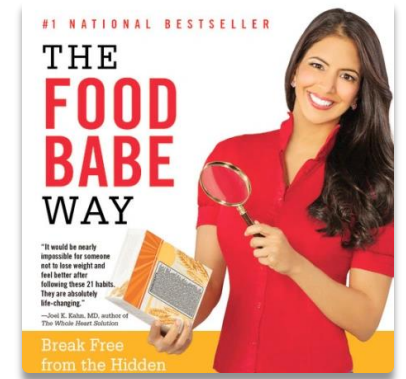
Why Change?

► Usage limit:

Food	Limitation (ppm)
Dressings, non-standardized	75
French dressing	75
Mayonnaise	75
Salad dressing	75
Sandwich spread	100
Sauces	75

► Consumer & media perception:

- EDTA = Ethylenediaminetetraacetic acid
- “Harsh preservative”
- “This preservative is made from formaldehyde, sodium cyanide, and ethylenediamine – sounds like fresh food, doesn’t it?”



EDTA Alternatives Explored

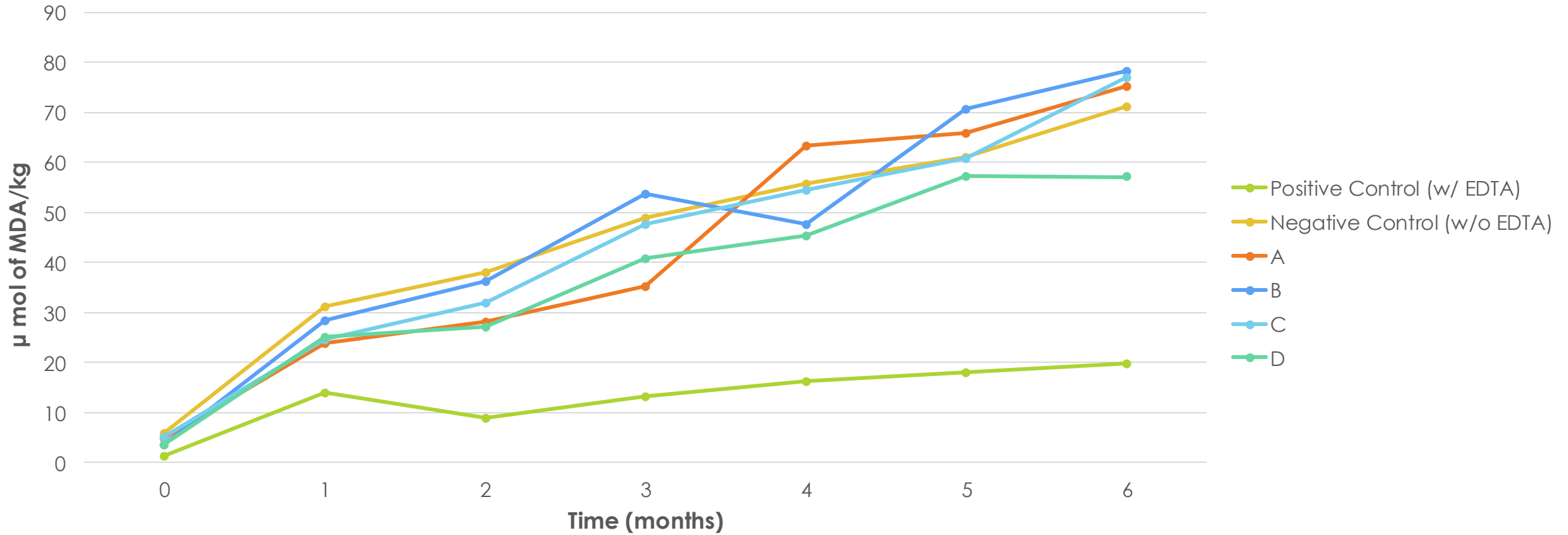
Treatment	Ingredient Statement
Positive control (EDTA)	EDTA
Negative control (no treatment)	-
A	Natural Flavor (Rice flour, spearmint extract, rosemary extract)
B	Natural Flavor (Maltodextrin, spinach extract, rosemary extract)
C	Gluconic Acid (Gluconic Acid, water)
D	Natural Flavor (Fruit extract, maltodextrin, rosemary extract)

EDTA Alternative Treatments Tested in ADS Full-Fat Mayonnaise

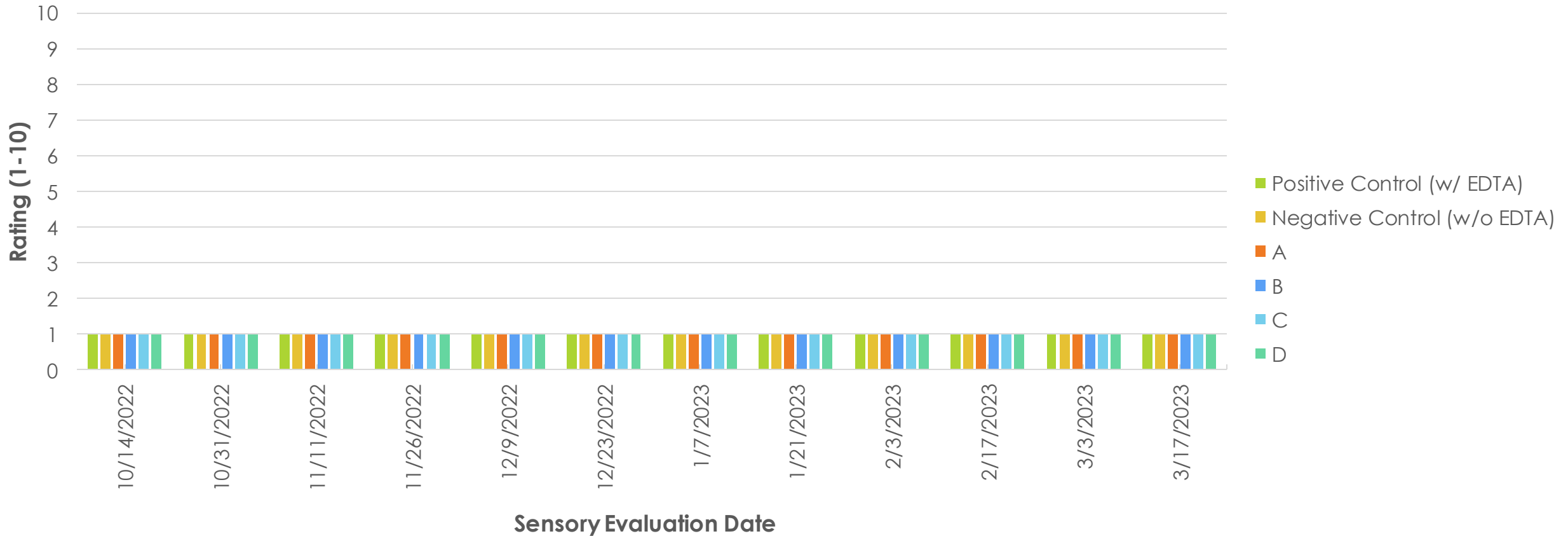
Ingredient	ADS (%)
Soybean oil	78.99
Water	7.10
Egg yolk (10% salt)	2.00
Whole egg (10% salt)	4.00
Sugar	4.00
Vinegar (120 grain)	3.00
Salt	0.60
Mustard flour	0.30
EDTA	0.01

Treatment	Usage Level (%)
Positive control (EDTA)	0.01
Negative control (no treatment)	0.00
A	0.08
B	0.30
C	0.50
D	0.20

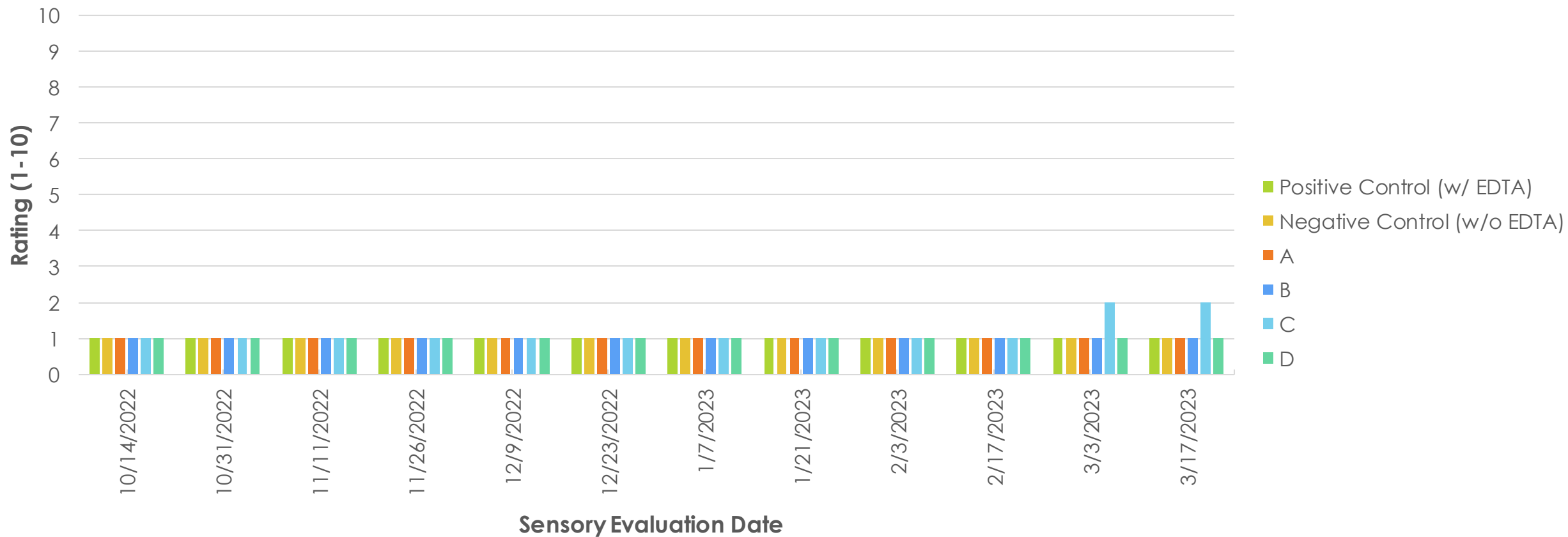
Mayonnaise TBAR Data



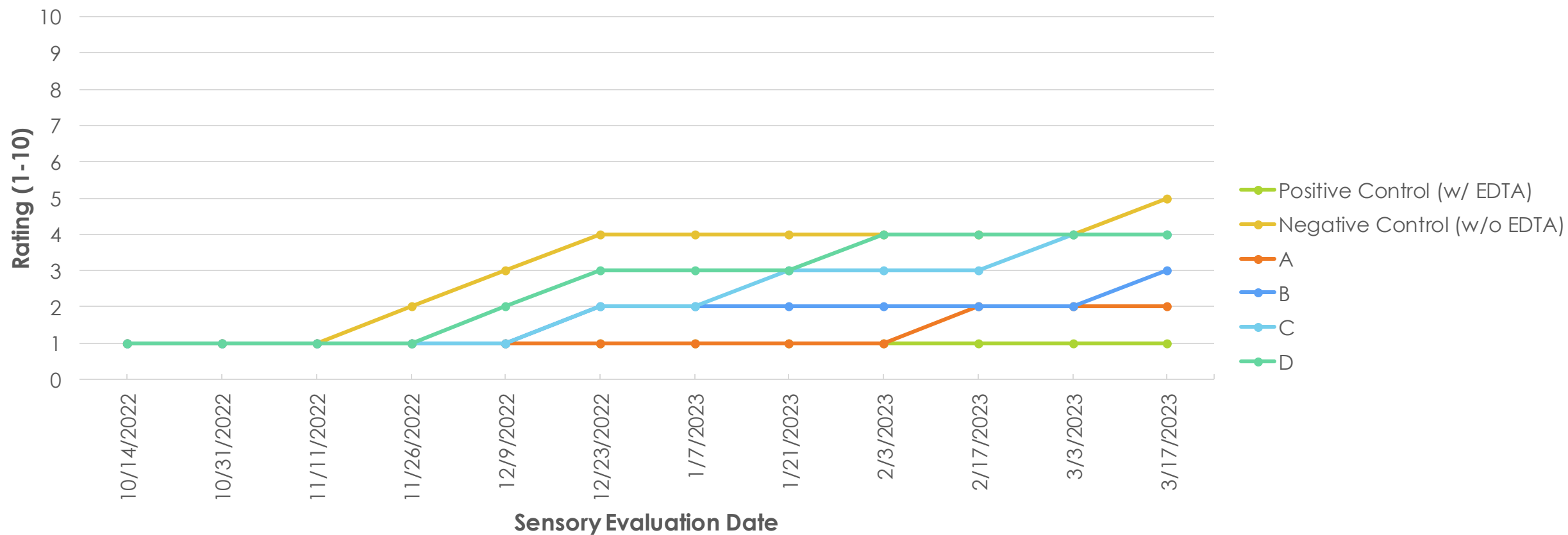
Mayonnaise Sensory - Appearance



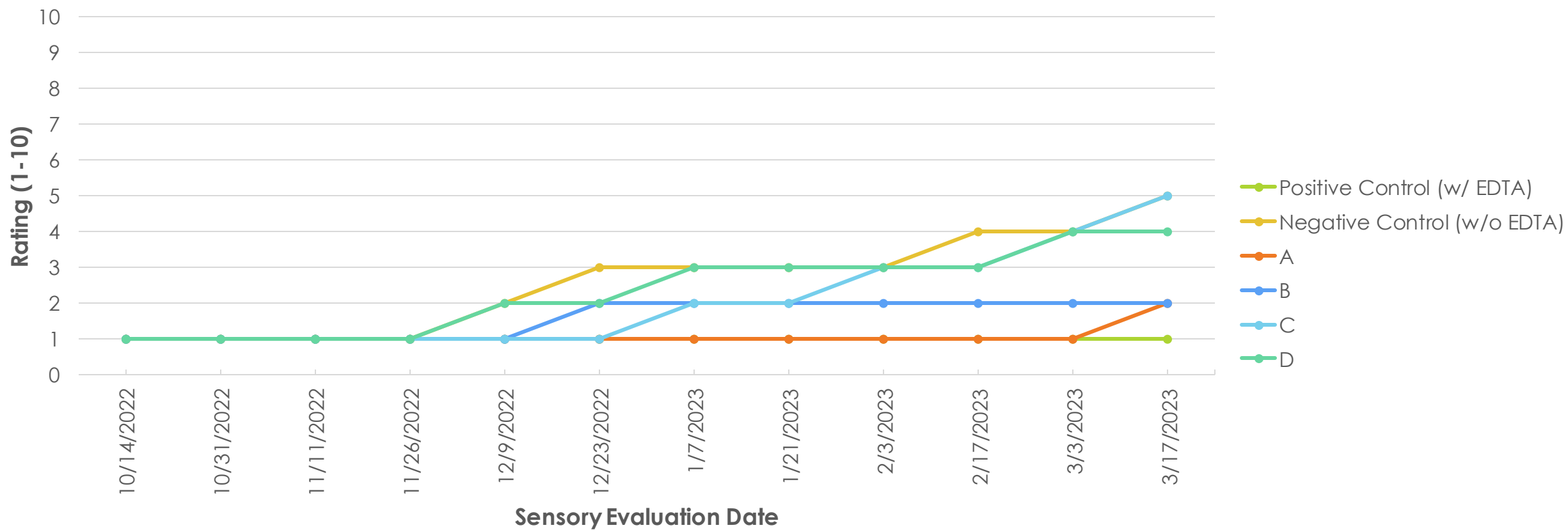
Mayonnaise Sensory - Color



Mayonnaise Sensory - Aroma



Mayonnaise Sensory - Flavor

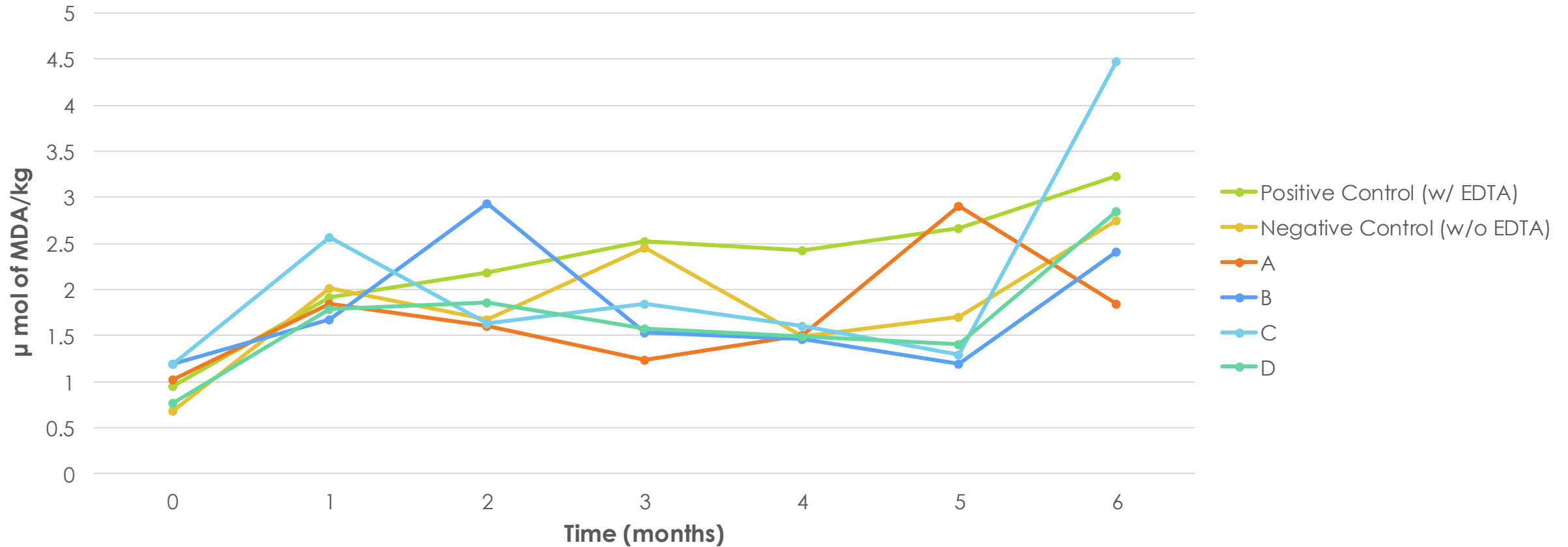


EDTA Alternative Treatments Tested in ADS Generic Ranch Dressing

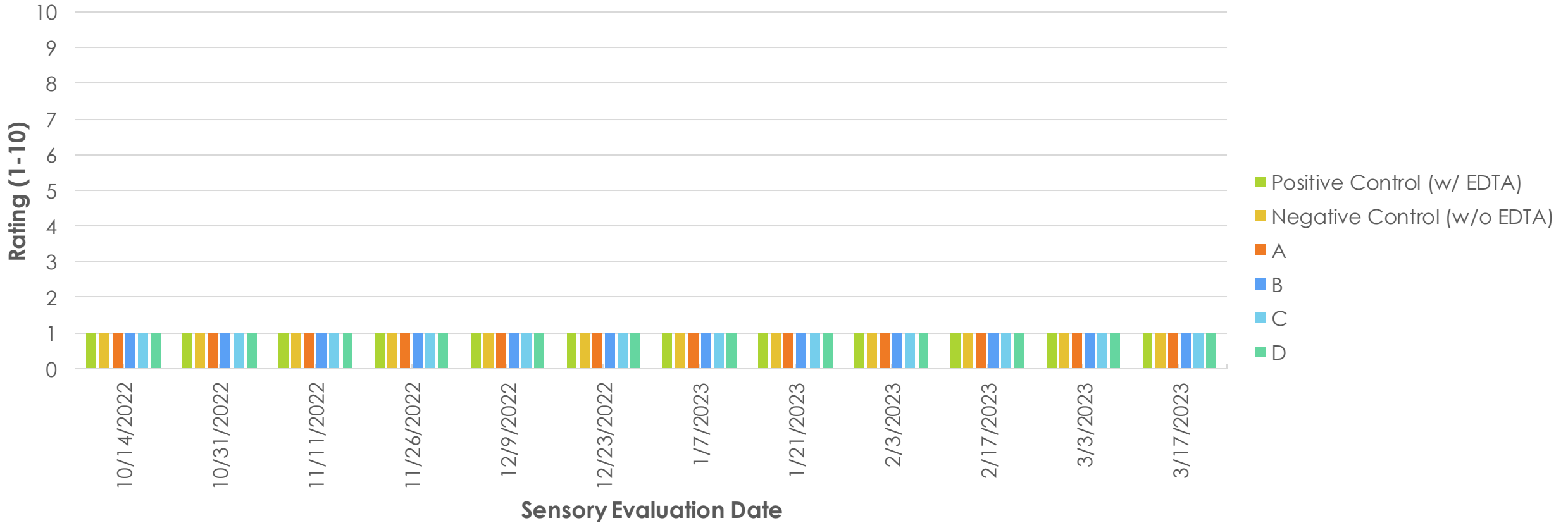
Ingredient	ADS (%)	M. Ryan (%)
Soybean oil	42.000	42.000
Water	39.490	39.533
Vinegar (120 grain)	5.900	5.900
Egg yolk (10% salt)	3.500	3.500
Sugar	3.300	3.300
Buttermilk powder	1.500	1.500
Salt	1.700	1.700
Garlic powder	0.600	0.600
Onion powder	0.250	0.250
Black pepper (30 mesh)	0.050	0.050
Parsley (granules)	0.050	0.050
Xanthan gum	0.350	0.350
Monosodium glutamate	0.500	0.500
Phosphoric acid	(75%) 0.300	(85%) 0.261
Potassium sorbate	0.100	0.100
Modified food starch	0.400	0.400
EDTA	0.006	0.006

Treatment	Usage Level (%)
Positive control (EDTA)	0.006
Negative control (no treatment)	0.000
A	0.120
B	0.300
C	0.500
D	0.150

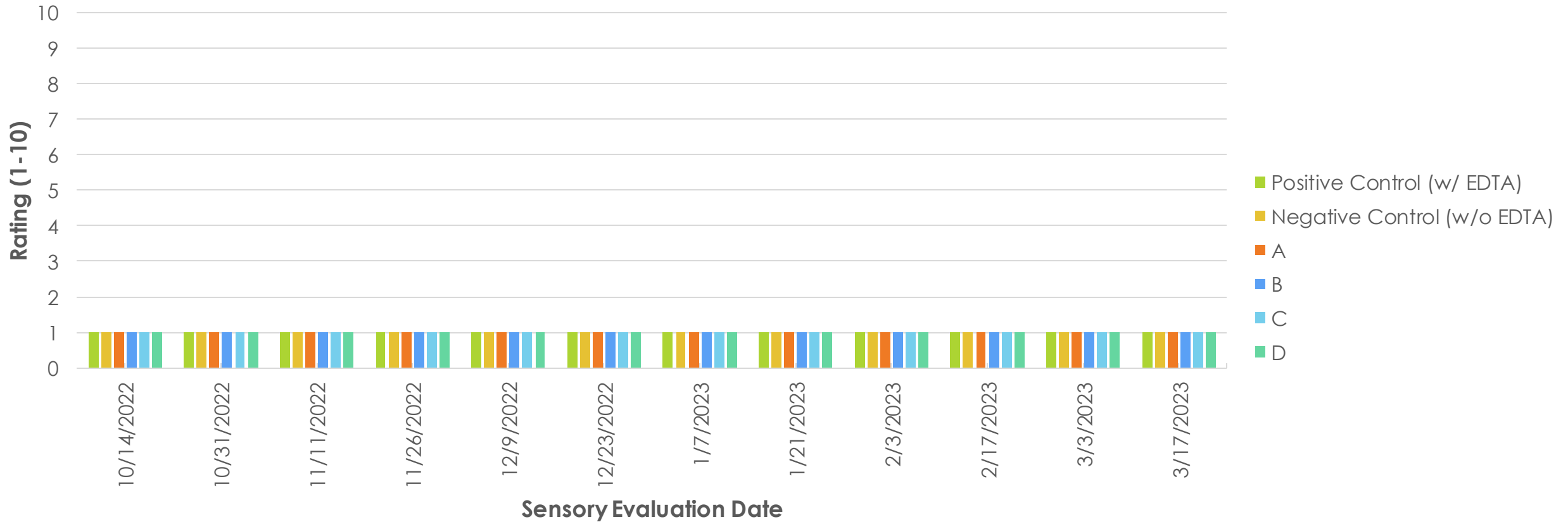
Ranch TBAR Data



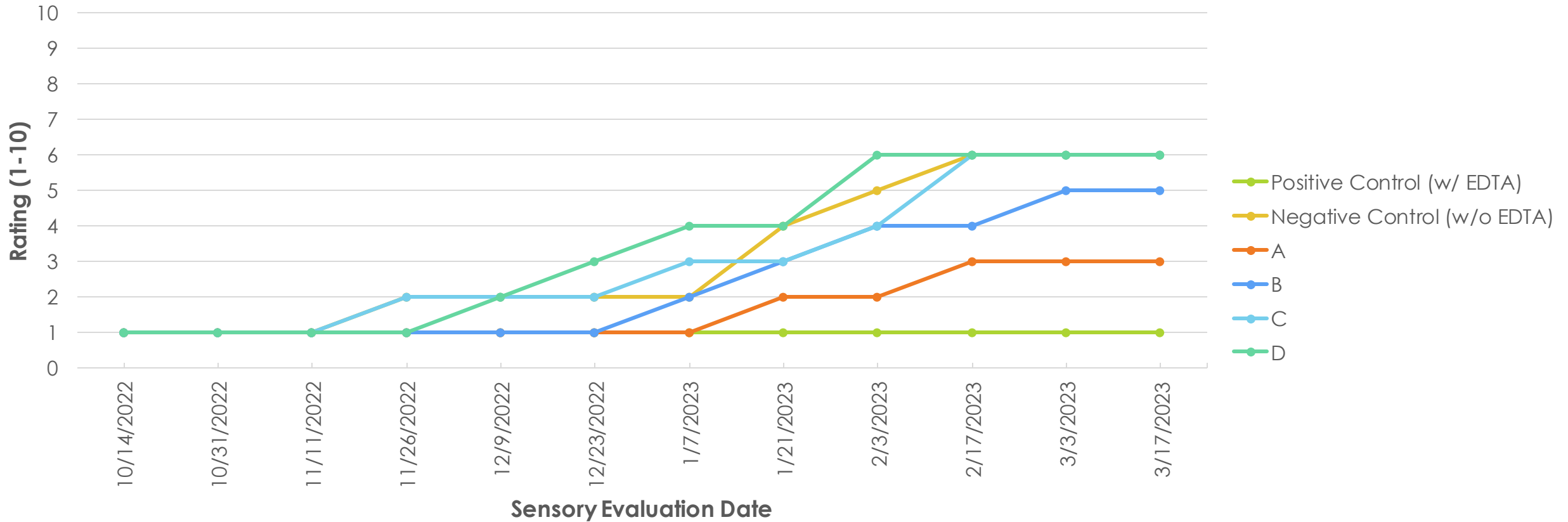
Ranch Sensory - Appearance



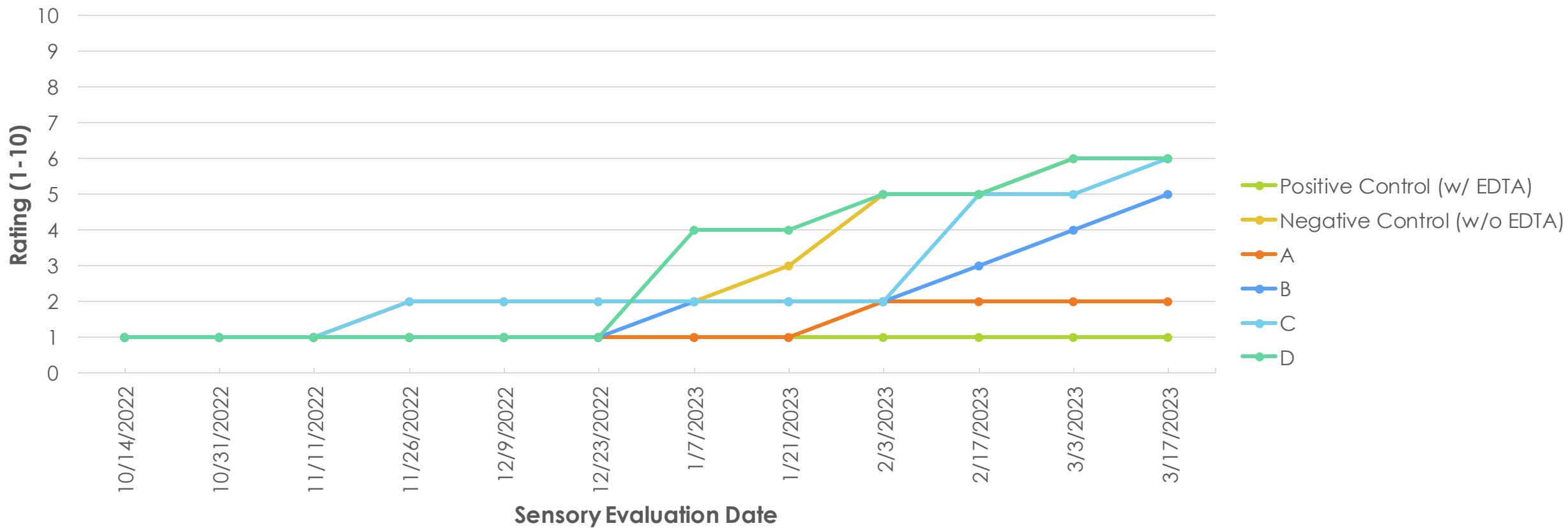
Ranch Sensory - Color



Ranch Sensory - Aroma



Ranch Sensory - Flavor



Summary:

- ▶ None of the 4 treatments performed as well as EDTA
- ▶ Some of the treatments came close and were still acceptable by month 5
- ▶ The data collected over 5 months shows that the 4 treatments have promise

- ▶ Next Steps:
 - ▶ It is worth investing time applying treatments of interest into specific product matrices (i.e. member's dressings/mayo recipes)
 - ▶ When trying in-house, members can push the dosage envelope for a longer shelf-life without crossing the sensory acceptance threshold

Thank You

- ▶ Brooks' Botting Co: **Zach Bender**
- ▶ Chelten House: **George Arbocus, Perri Biederman**
- ▶ Chesapeake Spice: **Alexa Vaughan**
- ▶ IFF: **David Horowitz**
- ▶ IMCD: **Colm Swan**
- ▶ Ingredient: **Xin Yang**
- ▶ Jungbunzlauer: **Emily Hutchinson**
- ▶ Kemin: **Jayant Kamicheril**
- ▶ Ken's: **Liz McColl**
- ▶ Reily Foods: **Lou Reyes**
- ▶ Sauer Brands: **Mike Ryan**
- ▶ Sunsweet Growers: **Rick Perez**
- ▶ **Megan Weathers**

Appendix

- ▶ Mayonnaise Process
- ▶ Ranch Process
- ▶ Key

Mayonnaise Process

Blend dry ingredients.

Make the brine by adding the water and vinegar to the Scott followed by the dry ingredients.

Add egg to 5-6 gallon plastic pail.

Start the agitation on 15 Hz. Slowly add the brine and oil, alternating. Rotate the vat to ensure a good mix.

Mill product through mill with mill gap at 50. Discard 1st quart of product and then collect samples into pints.

Label product accordingly.

Ranch Process

- ▶ Six 32 lb batches were made on October 5th & 6th

- ▶ Scott Turbon Mixer: model LA2-3

- ▶ In-house raw materials used

Dissolve preservatives in water.

Slowly add starch, avoiding lumps. Mix for 5 minutes on medium agitation.

Slowly hydrate gum in 1% of SBO. Mix on medium/high agitation for 5 minutes.

Add remaining dry ingredients followed by phosphoric acid & vinegar. Mix until lump-free.

Take slurry to lab & record weight.

Adjust agitation to roll product & add egg yolk.

Maintain small vortex and ample agitation while adding remaining SBO; avoid incorporation of air.

Fold in herbs & take finished product sample to lab.

Repeat for remaining batches.