

Supplemental material

Ileostomate and jejunostomate are at higher risk of circulating food-specific-IgG than other participants with digestive illness including colostomates

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Supplemental Tables 1 to 5

Supplemental Figure 1

Supplemental Table 1. Number of sera samples acquired per diagnostic group (n=198).

ICD-10 ¹	ICD-10 Code Description	Number of samples ²
Z93.4	Jejunostomy present	22
Z93.3	Colostomy in place	18
Z93.2	Ileostomy present	31
K50.0*	Crohn's Disease	18
K50.00	Crohn's disease of small intestine without complication	7
K50.012	Crohn's disease of small intestine with intestinal obstruction	3
K50.013	Crohn's disease of small intestine with fistula	1
K50.018	Crohn's disease of small intestine with other complication	3
K50.019	Terminal ileitis with complication	4
K35.*	Acute appendicitis	18
K35.20	Acute appendicitis with generalized peritonitis	1
K35.32	Acute appendicitis with rupture	2
K35.80	Acute appendicitis, unspecified acute appendicitis type	8
K35.30	Acute appendicitis with localized peritonitis	7
K29.80	Duodenitis	25
K51.0*	Ulcerative colitis	15
K51.00	Ulcerative pancolitis without complication	12
K51.011	Ulcerative pancolitis with rectal bleeding	3
K20.0	Eosinophilic esophagitis	15
K90.49	Food Malabsorption due to intolerance	18
K05.30	Periodontitis	18

¹ The codes represent the selected diagnostic groups using International Classification of Diseases, Tenth Revision (ICD-10). Asterisks represent that the preceding alphanumeric sequence may be further broken down into subcategories of the selected ICD-10 code.

² Bolded numbers refer to the total number of samples received in each diagnostic category. Non-bolded numbers are the breakdown of the number of samples received from each subcategory.

Supplemental Table 2: Food tested in this investigation organized by USDA categories in decreasing order of frequency of positive rate within the population tested.

Category¹	Foods²
Milk	Cow's Milk*, Goat's/Sheep's Milk*
Eggs	Egg White*, Egg Yolk*
Cereal grains and pasta	Wheat*, Gluten*, Corn (Maize)*, Barley*, Buckwheat*, Rice*, Rye*, Oat, Durum Wheat
Legumes and legume products	Peanut*, Soybean*, Pea*, Chickpea*, Haricot/Kidney Bean*, Lentil*
Yeast	Yeast (beer)*, Yeast (bread)*
Nuts and seeds	Pistachio*, Almond*, Hazelnut*, Chestnut*, Pine Seed, Sunflower Seed, Sesame Seed, Cola Nut, Walnut, Cocoa Bean
Fruit	Lemon/Lime*, Melon*, Orange/Tangerine*, Pineapple*, Apricot/Peach*, Cherry*, Banana*, Olive*, Plum, Strawberry*, Kiwi Fruit, Apple, Pear, Grape Black/White, Watermelon, Fig
Spices, Herbs, and Sweets	Mustard*, Black/White Pepper*, Basil, Capers, Honey
Shellfish	Oyster/Clam*, Sepia/Calamar/Octopus*, Mussel*, Prawn/Shrimp, Crab/Lobster
Beverages	Coffee*, Tea
Other vegetables	Garlic*, Chilli*, Courgette (Zucchini)*, Onion*, Artichoke, Aubergine (Eggplant), Fennel, Mushroom, Cauliflower/Cabbage, Chicory, Lettuce, Cucumber, Parsley, Potato, String Bean (Green Bean)
Finfish	Tuna*, Cod*, Sardine/Anchovy, Sole, Trout/Hake, Sea Bass, Salmon
Red meat	Rabbit*, Pork, Lamb, Beef
Red and orange vegetables	Tomato*, Pumpkin, Carrot, Peppers/Capsicum
Dark green vegetables	Broccoli, Spinach
Poultry	Chicken, Turkey

¹ Food categories based on U.S. Department of Agriculture, Agricultural Research Service. FoodData Central, 2019. fdc.nal.usda.gov.

² Food listed in the Eagle Biosciences IgG (109 foods) ELISA Assay Kit

* Food tested positive for at least one individual

Supplemental Table 3. Food tested by the Eagle Biosciences IgG (109 foods) ELISA Assay Kit, with associated USDA categories and FoodData Central ID.

Category ¹	Food ²	FDC ID ³	Category	Food	FDC ID
Beverages	Coffee	171890	Nuts and seeds	Pistachio	170184
	Tea	174155		Almond	170567
Cereal grains and pasta	Wheat	169725		Hazelnut	170581
	Gluten	168147		Chestnut	170164
	Buckwheat	170286		Cocoa Bean	169593
	Corn (maize)	170288		Cola Nut	169588
	Barley	170284		Pine Seed	170591
	Rice	168931		Sesame Seed	170150
	Rye	168884		Sunflower Seed	170562
Dark green vegetables	Durum Wheat	169721		Walnut	170187
	Oat	169705		Chilli	170108
	Broccoli	787465		Courgette (Zucchini)	169291
Eggs	Spinach	787373		Onion	170000
	Egg White	172183	Garlic	169230	
Finfish	Egg Yolk	172184	Artichoke	169205	
	Cod	171955	Aubergine (Eggplant)	169228	
Fruit	Salmon	175138	Cauliflower/Cabbage	169986, 169975	
	Sardine/Anchovy	175139, 174182	Chicory	169992	
	Sea Bass	175142	Cucumber	168409	
	Sole	174196	Fennel	169385	
	Trout/Hake	175153	Lettuce	169249	
	Tuna	173706	Mushroom	169251	
	Lemon/Lime	167746, 168155	Parsley	170416	
	Melon	169092	Potato	170026	
	Apricot/Peach	171697, 169928	String Bean	169961	
	Orange/Tangerine	169919, 169105	Chicken	171116	
Pineapple	169124	Turkey	171505		
Cherry	171719	Tomato	170457		
Olive	169094	Carrot	170393		
Apple	171689	Peppers/Capsicum	787810		
Banana	173944	Pumpkin	168448		
Fig	173021	Rabbit	174347		
Grape Black/White	174682	Beef	168608		
Kiwifruit	168153	Lamb	174370		
Pear	169118	Pork	167902		
Plum	169949	Oyster/Clam	171978, 782757		
Strawberry	167762	Sepia/Calamar/Octopus	174215, 782743, 174218		
Watermelon	167765	Crab/Lobster	174204, 174208		
Legumes and legume	Peanut	172430	Mussel	174216	

products	Soya Bean	174270	Spices, herbs, and sweets	Prawn/Shrimp	175179
	Pea	170419		Mustard	172234
	Lentil	172420		Basil	172232
	Chickpea	173756		Black/White Pepper	170931, 170933
	Haricot/Kidney Bean	175193		Caper	172238
Milk	Cow's Milk	781084	Yeasts	Honey	169640
	Goat's/Sheep's Milk	171278, 170882		Yeast (beer)	788564
				Yeast (bread)	175043

¹ Food categories based on U.S. Department of Agriculture, Agricultural Research Service. FoodData Central, 2019. fdc.nal.usda.gov.

² Food listed in the Eagle Biosciences IgG (109 foods) ELISA Assay Kit

³ FoodData Central ID

Supplemental Table 4. Demographic table per total population examined and individual diagnosis.

ICD-10 diagnosis	N	Percent of total population	Percent in ICD-10 code	Mean age (years)
Population	198			
Female	104	52.53%	NA	50.10 (±18.00)
Male	94	47.47%	NA	49.20 (±17.00)
Appendicitis	18			
Female	6	3.03%	33.33%	35.17 (±12.92)
Male	12	6.06%	66.67%	51.00 (±16.71)
Colostomy	18			
Female	9	4.55%	50.00%	63.44 (±20.17)
Male	9	4.55%	50.00%	58.56 (±14.15)
Crohn's Disease	18			
Female	9	4.55%	50.00%	47.89 (±16.05)
Male	9	4.55%	50.00%	46.78 (±10.94)
Duodenitis	25			
Female	15	7.58%	60.00%	59.53 (±13.34)
Male	10	5.05%	40.00%	59.70 (±18.56)
Eosinophilic Esophagitis	15			
Female	10	5.05%	66.67%	36.40 (±14.42)
Male	5	2.53%	33.33%	38.20 (±14.48)
Food Malabsorption	18			
Female	9	4.55%	50.00%	51.11 (±13.78)
Male	9	4.55%	50.00%	47.11 (±17.97)
Ileostomy	31			
Female	15	7.58%	48.39%	53.27 (±14.35)
Male	16	8.08%	51.61%	52.25 (±15.03)
Jejunostomy	22			
Female	14	7.07%	63.64%	49.36 (±17.54)
Male	8	4.04%	36.36%	48.75 (±21.95)
Periodontitis	18			
Female	9	4.55%	50.00%	40.67 (±21.77)
Male	9	4.55%	50.00%	36.33 (±13.87)
Ulcerative Colitis	15			
Female	8	4.04%	53.33%	53.50 (±22.01)
Male	7	3.54%	46.67%	42.43 (±17.14)

Supplemental Table 5. Percent of population with food-specific-IgG, broken down by diagnostic category.

Food	Total	Appendicitis	Colostomy	CD ¹	Duodenitis	EE ²	FI ³	Ileostomy	Jejunostomy	Periodontitis	UC ⁴
Wheat	36%	28%	33%	44%	16%	60%	44%	39%	41%	33%	33%
Yeast (beer)	28%	22%	22%	50%	16%	13%	50%	29%	50%	6%	20%
Peanut	19%	17%	28%	11%	12%	27%	33%	19%	23%	11%	13%
Yeast (bread)	19%	11%	6%	50%	8%	0%	22%	23%	41%	6%	13%
Gluten	15%	6%	11%	6%	4%	53%	17%	19%	14%	17%	7%
Soya Bean	14%	6%	17%	11%	8%	33%	17%	16%	18%	6%	13%
Pistachio	13%	11%	17%	6%	20%	13%	17%	19%	9%	0%	13%
Mustard	13%	11%	17%	17%	8%	20%	28%	6%	5%	6%	20%
Corn (Maize)	10%	0%	11%	22%	4%	13%	0%	10%	32%	0%	0%
Pea	9%	0%	22%	6%	4%	7%	11%	10%	18%	0%	7%
Oyster/Clam	9%	17%	17%	0%	4%	13%	22%	10%	0%	0%	7%
Lemon/Lime	9%	6%	22%	11%	0%	20%	22%	6%	0%	6%	0%
Barley	8%	0%	22%	11%	0%	13%	6%	13%	14%	0%	0%
Almond	8%	6%	6%	6%	4%	20%	17%	10%	5%	6%	7%
Chick Pea	6%	0%	6%	0%	0%	7%	17%	3%	18%	0%	13%
Buckwheat	6%	0%	11%	11%	0%	7%	6%	10%	14%	0%	0%
Hazelnut	6%	0%	11%	6%	0%	13%	6%	3%	9%	6%	7%
Sepia/Calamar/ Octopus	5%	6%	6%	0%	4%	7%	6%	10%	0%	0%	7%
Melon	5%	0%	11%	6%	0%	7%	6%	3%	14%	0%	0%
Haricot/Kidney Bean	4%	0%	6%	6%	0%	0%	11%	3%	14%	0%	0%
Lentil	4%	0%	0%	6%	0%	7%	6%	3%	14%	0%	0%
Rice	3%	0%	11%	0%	0%	13%	0%	0%	9%	0%	0%

Orange/ Tangerine	3%	0%	6%	6%	0%	7%	6%	3%	0%	0%	0%
Coffee	3%	6%	0%	6%	0%	7%	6%	3%	0%	0%	0%
Chestnut	2%	0%	0%	0%	0%	13%	6%	0%	5%	0%	0%
Garlic	2%	0%	0%	0%	0%	0%	6%	3%	5%	0%	0%
Apricot/Peach	2%	0%	6%	0%	0%	7%	6%	0%	0%	0%	0%
Cherry	2%	0%	6%	0%	0%	7%	6%	0%	0%	0%	0%
Pineapple	2%	0%	11%	0%	0%	0%	0%	0%	5%	0%	0%
Rabbit	2%	6%	6%	0%	0%	0%	0%	0%	0%	0%	7%
Tomato	1%	0%	6%	0%	0%	7%	0%	0%	0%	0%	0%
Rye	1%	0%	0%	0%	0%	7%	0%	0%	5%	0%	0%
Cod	1%	0%	6%	0%	0%	0%	0%	0%	0%	6%	0%
Banana	1%	0%	0%	0%	0%	0%	0%	0%	9%	0%	0%
Courgette	1%	0%	0%	0%	0%	0%	0%	3%	0%	0%	0%
Onion	1%	0%	0%	0%	0%	0%	0%	0%	5%	0%	0%
Chilli	1%	0%	6%	0%	0%	0%	0%	0%	0%	0%	0%
Blakc/White Pepper	1%	0%	0%	0%	0%	0%	6%	0%	0%	0%	0%
Olive	1%	0%	0%	0%	0%	7%	0%	0%	0%	0%	0%
Mussel	1%	6%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Tuna	1%	6%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Strawberry	1%	0%	0%	0%	0%	7%	0%	0%	0%	0%	0%

¹ Crohn's Disease

² Eosinophilic esophagitis

³ Food intolerance

⁴ Ulcerative Colitis

Supplemental Figure 1: Distributions of the percentage of the sample with food-specific-IgG across food types. Total sample distribution is followed by each ICD-10 group in order of decreasing odd ratio.

(see next page)

