



## SUPPLEMENTARY DATA

### Human and Clinical Nutrition

# An Observational Study on the Use of Manual Muscle Testing for Dietary Elimination in Food Sensitivity-Related Conditions

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### Supplementary Table A1. Food Sensitivity Results

|               | Total (n=100)<br>n (%) | Asthma<br>(n=20)<br>n (%) | Atopic<br>Dermatitis<br>(n=20)<br>n (%) | Dyspepsia<br>(n=20)<br>n (%) | Fibromyalgia<br>(n=20)<br>n (%) | Low Back Pain<br>(n=20)<br>n (%) |
|---------------|------------------------|---------------------------|-----------------------------------------|------------------------------|---------------------------------|----------------------------------|
| Wheat         | 30 (30)                | 6 (30)                    | 6 (30)                                  | 6 (30)                       | 7 (35)                          | 5 (25)                           |
| Oat           | 4 (4)                  | 1 (5)                     | 0(0)                                    | 1 (5)                        | 1 (5)                           | 1(5)                             |
| Barley        | 2 (2)                  | 1(5)                      | 1 (5)                                   | 0 (0)                        | 0 (0)                           | 0(0)                             |
| Millet        | 3 (3)                  | 2 (10)                    | 1 (5)                                   | 1 (5)                        | 0 (0)                           | 0 (0)                            |
| Corn          | 12 (12)                | 4 (20)                    | 1 (5)                                   | 2 (10)                       | 3 (15)                          | 2 (10)                           |
| Rice          | 17 (17)                | 5 (20)                    | 5 (25)                                  | 2 (10)                       | 4 (20)                          | 1 (5)                            |
| Rye           | 6 (6)                  | 1 (5)                     | 1 (5)                                   | 2 (10)                       | 0 (0)                           | 2 (10)                           |
| Spelt         | 11 (11)                | 2 (10)                    | 3 (15)                                  | 2 (10)                       | 2 (10)                          | 2 (10)                           |
| Milling wheat | 9 (9)                  | 1 (5)                     | 2 (10)                                  | 2 (10)                       | 2 (10)                          | 2 (10)                           |
| Gluten        | 26 (26)                | 5 (25)                    | 6 (30)                                  | 4 (20)                       | 5 (25)                          | 6 (30)                           |
| Buckwheat     | 7 (7)                  | 1 (5)                     | 3 (15)                                  | 1 (5)                        | 1 (0)                           | 1 (5)                            |
| Bulghur       | 8 (8)                  | 1 (5)                     | 2 (10)                                  | 2 (10)                       | 1 (5)                           | 2 (10)                           |
| Yeast         | 21 (21)                | 4 (20)                    | 8 (40)                                  | 2 (10)                       | 4 (20)                          | 3 (15)                           |
| Chickpea      | 2 (2)                  | 2 (10)                    | 0 (0)                                   | 0 (0)                        | 0 (0)                           | 0 (0)                            |
| Green lentil  | 11 (11)                | 1 (5)                     | 3 (15)                                  | 2 (10)                       | 3 (15)                          | 2 (10)                           |
| Red lentil    | 11 (11)                | 4 (20)                    | 2 (10)                                  | 2 (10)                       | 2 (10)                          | 1 (5)                            |
| Dry Bean      | 0 (0)                  | 0 (0)                     | 0 (0)                                   | 0 (0)                        | 0 (0)                           | 0 (0)                            |
| Fish          | 10 (10)                | 0 (0)                     | 2 (10)                                  | 3 (15)                       | 2 (10)                          | 3 (15)                           |
| Herring       | 11 (11)                | 2 (10)                    | 3 (15)                                  | 2 (10)                       | 3 (15)                          | 1 (5)                            |
| Codfish       | 11 (11)                | 2 (10)                    | 4 (20)                                  | 2 (10)                       | 2 (10)                          | 1 (5)                            |
| Halibut       | 13 (13)                | 0 (0)                     | 5 (25)                                  | 3 (15)                       | 2 (10)                          | 3 (15)                           |
| Shell         | 6 (6)                  | 0 (0)                     | 1 (5)                                   | 2 (10)                       | 1 (5)                           | 2 (10)                           |
| Shrimps       | 0 (0)                  | 0 (0)                     | 0 (0)                                   | 0 (0)                        | 0 (0)                           | 0 (0)                            |
| Mussel        | 0 (0)                  | 0 (0)                     | 0 (0)                                   | 0 (0)                        | 0 (0)                           | 0 (0)                            |
| Sole fish     | 0 (0)                  | 0 (0)                     | 0 (0)                                   | 0 (0)                        | 0 (0)                           | 0 (0)                            |
| Salmon        | 8 (8)                  | 2 (10)                    | 3 (15)                                  | 2 (10)                       | 0 (0)                           | 1 (5)                            |
| Mackerel      | 8 (8)                  | 2 (10)                    | 3 (15)                                  | 2 (10)                       | 0 (0)                           | 1 (5)                            |
| Cow milk      | 37 (37)                | 9 (45)                    | 7 (35)                                  | 8 (40)                       | 6 (30)                          | 7(35)                            |
| Lactose       | 17 (17)                | 0 (0)                     | 2 (10)                                  | 5 (25)                       | 6 (30)                          | 4 (20)                           |
| Soya          | 14 (14)                | 2 (10)                    | 2 (10)                                  | 3 (15)                       | 3 (15)                          | 4 (20)                           |
| Chicken meat  | 14 (14)                | 6 (30)                    | 1 (5)                                   | 2 (10)                       | 4 (20)                          | 1 (5)                            |
| Beef          | 20 (20)                | 4 (20)                    | 3 (15)                                  | 3 (15)                       | 5 (25)                          | 5 (25)                           |
| Lamb          | 4 (4)                  | 1 (5)                     | 0 (0)                                   | 1 (5)                        | 2 (10)                          | 0 (0)                            |
| Bovine meat   | 23 (23)                | 6 (30)                    | 4 (20)                                  | 3 (15)                       | 5 (25)                          | 5 (25)                           |
| Pork          | 7 (7)                  | 2 (10)                    | 2 (10)                                  | 1 (5)                        | 2 (10)                          | 0 (0)                            |
| Mutton        | 11 (11)                | 4 (20)                    | 1 (5)                                   | 2 (10)                       | 3 (15)                          | 1 (5)                            |
| Bean          | 27 (27)                | 5 (25)                    | 6 (30)                                  | 7(35)                        | 5 (25)                          | 4 (20)                           |
| Carrot        | 16 (16)                | 1 (5)                     | 5 (25)                                  | 3 (15)                       | 3 (15)                          | 4 (20)                           |
| Potato        | 14 (14)                | 1 (5)                     | 5 (25)                                  | 3 (15)                       | 3 (15)                          | 2 (10)                           |
| Spinach       | 10 (10)                | 2 (10)                    | 2 (10)                                  | 3 (15)                       | 1 (5)                           | 2 (10)                           |
| Tomato        | 22 (22)                | 2 (10)                    | 5 (25)                                  | 5 (25)                       | 5 (25)                          | 5 (25)                           |

|                |           |        |         |        |         |        |
|----------------|-----------|--------|---------|--------|---------|--------|
| Squash         | 5 (5)     | 0 (0)  | 1 (5)   | 2 (10) | 1 (5)   | 1 (5)  |
| Eggplant       | 1 (1)     | 0 (0)  | 0 (0)   | 0 (0)  | 0(0)    | 1 (5)  |
| Onion          | 28 (28,5) | 3 (15) | 4 (20)  | 6 (30) | 6 (30)  | 9 (45) |
| Egg yolk       | 25 (25)   | 5 (25) | 5 (25)  | 4 (20) | 6 (30)  | 5 (25) |
| Egg white      | 29 (29)   | 8 (40) | 6 (30)  | 5 (25) | 5 (25)  | 5 (25) |
| Honey          | 12 (12)   | 3 (15) | 1 (5)   | 2 (10) | 3 (15)  | 3 (15) |
| Coffee         | 12 (12)   | 3 (15) | 3 (15)  | 2 (10) | 1 (5)   | 3 (15) |
| Cacao          | 15 (15)   | 1 (5)  | 3 (15)  | 4 (20) | 3 (15)  | 2 (10) |
| Tea            | 10 (10)   | 1 (5)  | 2 (10)  | 2 (10) | 2 (10)  | 3 (15) |
| Sugar          | 6 (6)     | 1 (5)  | 1 (5)   | 2 (10) | 0 (0)   | 2 (10) |
| Apple          | 13 (13)   | 4 (20) | 3 (15)  | 2 (10) | 1 (5)   | 3(15)  |
| Apricot        | 13(13)    | 4 (20) | 3 (15)  | 2 (10) | 1 (5)   | 3 (15) |
| Banana         | 12 (12)   | 2 (10) | 4 (20)  | 2 (10) | 1 (5)   | 3 (15) |
| Pear           | 15 (15)   | 2 (10) | 4 (20)  | 4 (20) | 2 (10)  | 3 (15) |
| Strawberry     | 15 (15)   | 2 (10) | 3 (15)  | 4 (20) | 3 (15)  | 3 (15) |
| Grapefruit     | 12 (12)   | 1 (5)  | 3 (15)  | 3 (15) | 3 (15)  | 2 (10) |
| Gooseberry     | 14 (14)   | 3 (15) | 3 (15)  | 2 (10) | 3 (15)  | 3 (15) |
| Cherry         | 5 (5)     | 0 (0)  | 0 (0)   | 2 (10) | 1 (5)   | 2 (10) |
| Orange         | 11 (11)   | 1 (5)  | 4 (20)  | 2 (10) | 2 (10)  | 2 (10) |
| Peach          | 7 (7)     | 2 (10) | 1 (5)   | 2 (10) | 0 (0)   | 2 (10) |
| Grape          | 1 (5)     | 0 (0)  | 0 (0)   | 0 (0)  | 0 (0)   | 1 (5)  |
| Lemon          | 8 (8)     | 2 (10) | 1 (5)   | 2 (10) | 1 (5)   | 2 (10) |
| Currant        | 11 (11)   | 2 (10) | 2 (10)  | 3 (15) | 2 (10)  | 2 (10) |
| Peanut         | 10 (10)   | 2 (10) | 1 (5)   | 3 (15) | 2 (10)  | 2 (10) |
| Hazelnut       | 11 (11)   | 1 (5)  | 3 (15)  | 3 (15) | 2 (10)  | 2 (10) |
| Almond         | 12 (12)   | 2 (10) | 2 (10)  | 3 (15) | 2 (10)  | 3 (15) |
| Walnut         | 12 (12)   | 2 (10) | 4 (20)  | 2 (10) | 2 (10)  | 2 (10) |
| Pistachio      | 3 (3)     | 1 (5)  | 1 (5)   | 0 (0)  | 0 (0)   | 1 (5)  |
| Cumin          | 10 (10)   | 2 (10) | 1 (5)   | 3 (15) | 1 (5)   | 3 (15) |
| Black pepper   | 9 (9)     | 3 (15) | 3 (15)  | 1 (5)  | 1 (5)   | 1(5)   |
| Red pepper     | 16 (16)   | 3 (15) | 2 (10)  | 3 (15) | 5 (25)  | 3 (15) |
| Sumac          | 13 (13)   | 1 (5)  | 3 (15)  | 3 (15) | 2 (10)  | 4 (20) |
| Turmeric       | 12 (12)   | 5 (25) | 0 (0)   | 2 (10) | 3 (15)  | 2 (10) |
| Estragon       | 4 (4)     | 0 (0)  | 1 (5)   | 0 (0)  | 2 (10)  | 1 (5)  |
| Cilantro       | 8 (8)     | 1 (5)  | 2 (10)  | 1 (5)  | 2 (10)  | 2 (10) |
| Cinnamon       | 7 (7)     | 3 (15) | 2 (10)  | 1 (5)  | 0 (0)   | 1 (5)  |
| Thyme          | 6 (6)     | 1 (5)  | 2 (10)  | 1 (5)  | 0 (0)   | 2 (10) |
| Gingers        | 7 (7)     | 0 (0)  | 1 (5)   | 2 (10) | 2 (10)  | 2 (10) |
| Sesame         | 19 (19)   | 6 (30) | 3 (15)  | 4 (20) | 6 (30)  | 3 (15) |
| Green tea      | 6 (6)     | 0 (0)  | 2 (10)  | 2 (10) | 0 (0)   | 2 (10) |
| Turkish coffee | 6 (6)     | 1 (5)  | 1 (5)   | 2 (10) | 0 (0)   | 2 (10) |
| Fennel         | 10 (10)   | 2 (10) | 0 (0)   | 2 (10) | 4 (20)  | 2 (10) |
| Chamomile tea  | 2(2)      | 0 (0)  | 1 (5)   | 0 (%0) | 0 (0)   | 1 (5)  |
| Cardamom       | 8 (8)     | 1 (5)  | 2 (10)  | 1(5)   | 2 (%10) | 2 (10) |
| Olive oil      | 51 (51)   | 13(65) | 10 (50) | 9 (45) | 10 (50) | 9 (45) |
| Sunflower oil  | 50 (50)   | 15(75) | 7 (35)  | 9 (45) | 10 (50) | 9 (45) |

Supplementary Table A2. Symptom scores of diseases at baseline and one-month post-intervention

|          | Elimination Diet |           |                 |           |                 |           |                 |           |                     |           |                        |           |                   |           |
|----------|------------------|-----------|-----------------|-----------|-----------------|-----------|-----------------|-----------|---------------------|-----------|------------------------|-----------|-------------------|-----------|
|          | AKT              |           | POEM            |           | RFIQ            |           | Quebec          |           | SODA Pain Intensity |           | SODA Non-Pain Symptoms |           | SODA Satisfaction |           |
| Sample   | Baseline         | One month | Baseline        | One month | Baseline        | One month | Baseline        | One month | Baseline            | One month | Baseline               | One month | Baseline          | One month |
| 1        | 22.00            | 25.00*    | 16.00           | 1.00*     | 69.67           | 35.00*    | 49.00           | 13.00*    | 33.00               | .00*      | 19.00                  | 7.00*     | 10.00             | 13.00*    |
| 2        | 13.00            | 24.00*    | 12.00           | 12.00     | 31.33           | 22.17*    | 48.00           | 32.00*    | 12.00               | 2.00*     | 15.00                  | 8.00*     | 11.00             | 13.00*    |
| 3        | 15.00            | 22.00*    | 7.00            | 9.00      | 62.33           | 35.50*    | 33.00           | 2.00*     | 23.00               | 3.00*     | 16.00                  | 10.00*    | 10.00             | 9.00      |
| 4        | 22.00            | 25.00*    | 15.00           | 1.00*     | 25.00           | 26.33     | 14.00           | 4.00*     | 22.00               | 8.00*     | 15.00                  | 23.00     | 11.00             | 14.00*    |
| 5        | 12.00            | 13.00     | 25.00           | .00*      | 81.00           | 67.83*    | 25.00           | 8.00*     | 21.00               | .00       | 17.00                  | 7.00*     | 10.00             | 13.00*    |
| 6        | 20.00            | 25.00*    | 25.00           | 17.00*    | 72.33           | 35.17*    | 22.00           | 11.00*    | 23.00               | .00*      | 26.00                  | 9.00*     | 12.00             | 13.00*    |
| 7        | 8.00             | 14.00*    | 14.00           | 12.00     | 40.83           | 32.83     | 29.00           | 4.00*     | 24.00               | 35.00     | 19.00                  | 22.00     | 12.00             | 12.00     |
| 8        | 12.00            | 18.00*    | 18.00           | 12.00*    | 58.17           | 45.33*    | 51.00           | 6.00*     | 33.00               | .00*      | 16.00                  | 7.00*     | 12.00             | 13.00*    |
| 9        | 15.00            | 21.00*    | 20.00           | 1.00*     | 55.67           | 40.17*    | 7.00            | 3.00      | 30.00               | 36.00     | 24.00                  | 19.00*    | 10.00             | 12.00*    |
| 10       | 17.00            | 13.00     | 8.00            | 6.00      | 66.17           | 19.67*    | 53.00           | 7.00*     | 29.00               | .00*      | 17.00                  | 8.00*     | 12.00             | 17.00*    |
| 11       | 16.00            | 21.00*    | 16.00           | 9.00*     | 53.50           | 28.67*    | 26.00           | 2.00*     | 25.00               | 3.00*     | 15.00                  | 11.00*    | 10.00             | 12.00*    |
| 12       | 15.00            | 19.00*    | 23.00           | 2.00*     | 20.17           | 1.50*     | 19.00           | 1.00*     | 10.00               | .00*      | 15.00                  | 7.00*     | 15.00             | 13.00     |
| 13       | 13.00            | 17.00*    | 10.00           | 2.00*     | 62.83           | 4.83*     | 57.00           | 25.00*    | 38.00               | .00*      | 23.00                  | 8.00*     | 13.00             | 13.00     |
| 14       | 10.00            | 13.00*    | 2.00            | .00       | 26.67           | 19.17*    | 36.00           | 24.00*    | 33.00               | 3.00*     | 20.00                  | 9.00*     | 12.00             | 12.00     |
| 15       | 9.00             | 15.00*    | 21.00           | 6.00*     | 80.67           | 8.33*     | 50.00           | 9.00*     | 9.00                | .00*      | 14.00                  | 10.00*    | 12.00             | 12.00     |
| 16       | 13.00            | 22.00*    | 9.00            | 1.00*     | 54.00           | 45.00     | 33.00           | 1.00*     | 18.00               | .00*      | 21.00                  | 10.00*    | 12.00             | 12.00     |
| 17       | 9.00             | 18.00*    | 20.00           | 3.00*     | 69.67           | 36.83*    | 76.00           | 39.00*    | 35.00               | .00*      | 19.00                  | 7.00*     | 12.00             | 13.00*    |
| 18       | 9.00             | 18.00*    | 24.00           | 2.00*     | 82.17           | 79.17     | 30.00           | 11.00*    | 40.00               | .00*      | 23.00                  | 12.00*    | 12.00             | 12.00     |
| 19       | 7.00             | 17.00*    | 23.00           | 2.00*     | 31.67           | 16.33*    | 32.00           | 24.00*    | 23.00               | 33.00     | 22.00                  | 17.00*    | 13.00             | 13.00     |
| 20       | 15.00            | 25.00*    | 13.00           | .00*      | 59.50           | 11.83*    | 15.00           | 16.00     | 7.00                | 10.00     | 14.00                  | 13.00     | 11.00             | 14.00*    |
| Mean ±SD | 13.6±4.3         | 19.2±4.3  | 15.4±7.4        | 5.0±5.2   | 55.1±19.5       | 30.5±19.5 | 19.2±16.4       | 11.6±9.6  | 22.6±10.9           | 6.2±10.7  | 18.7±4.4               | 11.0±4.3  | 11.7±2.0          | 13.0±1.6  |
| MCID     | 2.15             |           | 3.2             |           | 9.75            |           | 6.72            |           | 5.4                 |           | 2.1                    |           | 0.9               |           |
|          | 90% Improvement  |           | 75% Improvement |           | 80% Improvement |           | 90% Improvement |           | 75% Improvement     |           | 85% Improvement        |           | 55% Improvement   |           |
| Control  |                  |           |                 |           |                 |           |                 |           |                     |           |                        |           |                   |           |
| Sample   | Baseline         | One month | Baseline        | One month | Baseline        | One month | Baseline        | One month | Baseline            | One month | Baseline               | One month | Baseline          | One month |
| 1        | 18.00            | 19.00     | 7.00            | 8.00      | 38.00           | 39.00     | 16.00           | 18.00     | 31.00               | 28.00     | 23.00                  | 20.00*    | 13.00             | 10.00     |
| 2        | 10.00            | 11.00     | 17.00           | 18.00     | 70.80           | 68.40     | 10.00           | 12.00     | 26.00               | 26.00     | 17.00                  | 13.00*    | 10.00             | 11.00     |
| 3        | 9.00             | 10.00     | 16.00           | 14.00     | 45.10           | 48.20     | 20.00           | 22.00     | 14.00               | 16.00     | 18.00                  | 18.00     | 13.00             | 11.00     |
| 4        | 22.00            | 21.00     | 16.00           | 15.00     | 41.10           | 38.20     | 34.00           | 32.00     | 25.00               | 23.00     | 16.00                  | 16.00     | 12.00             | 11.00     |
| 5        | 14.00            | 15.00     | 12.00           | 14.00     | 29.30           | 35.60     | 24.00           | 28.00     | 23.00               | 21.00     | 22.00                  | 20.00     | 13.00             | 15.00*    |
| 6        | 19.00            | 15.00     | 16.00           | 20.00     | 66.60           | 64.30     | 62.00           | 66.00     | 31.00               | 30.00     | 27.00                  | 28.00     | 13.00             | 15.00*    |
| 7        | 14.00            | 12.00     | 22.00           | 23.00     | 54.30           | 51.70     | 32.00           | 24.00*    | 18.00               | 16.00     | 12.00                  | 12.00     | 18.00             | 18.00     |
| 8        | 14.00            | 16.00     | 10.00           | 8.00      | 60.30           | 66.10     | 10.00           | 12.00     | 18.00               | 15.00     | 16.00                  | 13.00*    | 15.00             | 13.00     |
| 9        |                  |           |                 |           |                 |           |                 |           | 21.00               | 15.00*    | 13.00                  | 13.00     | 11.00             | 13.00*    |
| 10       |                  |           |                 |           |                 |           |                 |           | 27.00               | 27.00     | 21.00                  | 12.00*    | 9.00              | 13.00*    |
| 11       |                  |           |                 |           |                 |           |                 |           | 26.00               | 26.00     | 21.00                  | 21.00     | 7.00              | 8.00*     |
| 12       |                  |           |                 |           |                 |           |                 |           | 14.00               | 15.00     | 16.00                  | 16.00     | 11.00             | 12.00*    |
| 13       |                  |           |                 |           |                 |           |                 |           | 20.00               | 18.00     | 24.00                  | 25.00     | 12.00             | 13.00*    |

|             |                |          |                |          |                |           |                       |           |                   |          |                    |          |                    |          |
|-------------|----------------|----------|----------------|----------|----------------|-----------|-----------------------|-----------|-------------------|----------|--------------------|----------|--------------------|----------|
| 14          |                |          |                |          |                |           |                       |           | 31.00             | 29.00    | 27.00              | 25.00    | 12.00              | 10.00    |
| 15          |                |          |                |          |                |           |                       |           | 21.00             | 20.00    | 23.00              | 21.00    | 10.00              | 10.00    |
| 16          |                |          |                |          |                |           |                       |           | 18.00             | 19.00    | 19.00              | 21.00    | 14.00              | 13.00    |
| 17          |                |          |                |          |                |           |                       |           | 23.00             | 19.00    | 25.00              | 22.00*   | 13.00              | 13.00    |
| 18          |                |          |                |          |                |           |                       |           | 11.00             | 11.00    | 17.00              | 20.00    | 13.00              | 11.00    |
| 19          |                |          |                |          |                |           |                       |           | 25.00             | 23.00    | 10.00              | 12.00    | 8.00               | 10.00*   |
| 20          |                |          |                |          |                |           |                       |           | 30.00             | 36.00    | 24.00              | 19.00*   | 10.00              | 10.00    |
| Mean<br>±SD | 15.0±4.4       | 14.8±3.8 | 14.5±4.6       | 15.0±5.3 | 50.6±14.6      | 51.4±13.4 | 26.0±17.1             | 26.7±17.3 | 18.2±10.6         | 17.3±9.6 | 18.7±5.1           | 17.2±6.2 | 11.8±1.8           | 12.6±5.3 |
|             | No Improvement |          | No Improvement |          | No Improvement |           | 12.5 %<br>Improvement |           | 5%<br>Improvement |          | 30%<br>Improvement |          | 40%<br>Improvement |          |