

The GH-Method

Hypothesis of Glucose Production Communication Model Between Brain and Other Internal Organs, Especially Stomach and Liver (No. 231)

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Abbreviations: T2D: type 2 diabetes; FPG: fasting plasma glucose; PPG: postprandial plasma glucose

1. INTRODUCTION

In October 2019, the author stumbled upon an intriguing discovery when he observed that his peak postprandial plasma glucose (PPG), which typically occurred about 60 minutes after his first bite of food, reached around 150 mg/dL when consuming a breakfast of eggs (almost pure protein). This value closely resembled his PPG levels after consuming breakfast meals at McDonald's, whether with or without a muffin or hash brown. This inconsistency raised questions about the impact of different meals on his glucose levels, which led to a 3-month research endeavor from October 2019 to January 2020 aimed at uncovering a numerological communication model between the brain and certain specific internal organs, particularly the stomach and liver, in the context of glucose production.

2. METHODS

The author employed a continuous glucose monitoring (CGM) sensor device to accumulate a dataset of 47,915 glucose readings over 636 days, spanning from May 5, 2018, to January 31, 2020, averaging approximately 75 glucose measurements per day. After the first bite of each meal, he monitored his PPG levels at 15-minute intervals for a duration of 3 hours (180 minutes). The investigation primarily revolved around examining the relationships between various meal inputs, such as nutritional content, cooking methods, and

physical phases of food meal, and different post-meal glucose outputs, including PPG waveforms or post-meal glucose curves. These observations of glucose variations led to the formation of his hypothesis regarding a communication model between the brain and specific internal organs facilitated by the nervous system. The author then proceeded to validate this neurological communication model regarding glucose production through his own experiments and related mathematical analyses.

The study delved into six distinct breakfast categories:

1. McDonald's breakfast with one egg and one sausage patty (protein and fat only, occasional inclusion of muffin or hash brown, averaged carbs/sugar: 10 grams) - 233 meals.
2. McDonald's breakfast with eggs, excluding muffin or hash brown but sometimes combined with other food elements (averaged carbs/sugar: 10.7 grams) - 80 meals.
3. Home-cooked pan-fried egg "solid shape" breakfasts with no additional carb/sugar ingredients (averaged carbs/sugar: 0.7 grams) - 27 meals.
4. Egg drop soup, a liquid form of eggs (averaged carbs/sugar: 0.9 grams) - 15 meals.
5. Fine-diced cabbage and tomato soup (averaged carbs/sugar: 10.7 grams) - 3 meals (limited data).

6. A diverse range of breakfasts (both home-cooked and eat-out) from over 20 international cities (averaged carbs/sugar: 11.0 grams) - 632 meals.

Notably, the average number of post-breakfast walking steps exceeded 4,400 steps for five of the six meal categories, with cabbage tomato soup having 3,933 steps. The author aimed for 4,000 post-meal walking steps. As exercise levels remained relatively consistent across these categories, the primary focus was directed towards the influence of carbohydrate and sugar intake from different foods on his post-breakfast PPG.

3. RESULTS

Figure 1 displays the comprehensive data from this specific neuroscience analysis, focusing primarily on the difference in postprandial plasma glucose (PPG) levels between the "peak" PPG (45-75 minutes after the first bite) and the "starting" PPG (at 0 minutes when the meal begins). The author's emphasis on PPG difference stems from the observation that the initial PPG data at the start of breakfast (0-minute) is significantly influenced by around five primary factors, with the morning fasting plasma glucose (FPG) being the key element.

2. Additionally, the averaged peak PPG for the two liquid-phase foods ranges from 123-127 mg/dL, whereas the remaining four solid-phase foods present peak PPG values within the range of 145-154 mg/dL.

To explain these observed phenomena, the author invokes principles from his learned basic physics in his junior high school days concerning the three fundamental phases of matter: solid, liquid, and gas. In this breakfast study, only two phases are relevant, the liquid phase for egg drop soup and cabbage tomato soup, and the solid phase for pan-fried eggs at home, McDonald's egg breakfasts, and all McDonald's breakfasts (a combination of eggs and other ingredients). As a result, the author's first hypothesis suggests that the glucose differences are due to the physical phase of the food, whether it is in liquid or solid form, and this is a direct consequence of the cooking method employed.

Drawing from his accumulated knowledge from nine years of medical research work, the author introduces three key insights:

1. Approximately 70% of our daily energy intake is consumed by our brain and nervous system.
2. The brain is the sole internal organ with cognitive abilities, capable of judgment, information processing, and issuing commands.
3. All internal organs work in close coordination under the directive authority of the brain.

Based on this understanding, the author formulates his second hypothesis. When a specific type of food enters onto our gastrointestinal system, the stomach immediately transmits a signal to alert the brain regarding the food's arrival and its physical phase (liquid or solid). Upon receiving this input signal, the brain processes the information, makes judgments, and decisions, subsequently issuing precise instructions to the liver on how much glucose to produce and within what timeframe to reach the glucose peak. Concurrently, the brain communicates with the pancreas, specifying the necessary insulin production in response to excessive glucose production by the liver.

Sensor PPG	Home Egg soup	Home egg only	Cabbage tomato soup	McDonald egg	McDonald Bkfst	ALL Breakfasts
# of Meals	15	27	3	80	233	632
Carbs grams	0.9	0.7	10.7	7.9	10.0	11.0
Photo-bkfst walk steps	4486	4843	3933	4708	4621	4456
Avg Finger PPG	110.9	113.7	110.3	115.7	117.6	116.6
Avg Sensor PPG	119.8	140.2	114.8	136.5	135.7	137.1
PPG mg/dL & % of PPG > 140	0 (0%)	148 (46%)	0 (0%)	143 (23%)	145 (23%)	145 (11%)
PPG difference (Peak-Start)	5	23	9	21	25	25
PPG Peak time	45 min	75 min	45 min	60 min	60 min	60 min

Sensor PPG	Home Egg soup	Home egg only	Cabbage tomato soup	McDonald egg	McDonald Bkfst	All Breakfasts
0 min	117.50	130.44	117.33	124.53	122.46	122.63
15 min	119.60	136.30	117.33	128.98	126.98	128.18
30 min	119.80	144.59	121.00	135.69	135.20	137.26
45 min	122.80	150.73	126.67	142.26	143.87	145.43
60 min	122.13	152.19	122.33	145.07	147.40	148.50
75 min	118.00	153.58	113.00	141.38	143.28	145.48
90 min	115.93	146.77	109.00	139.57	139.78	141.53
105 min	116.40	142.27	108.00	136.96	135.14	138.00
120 min	116.80	135.04	107.67	135.96	134.23	135.82
135 min	118.27	134.00	109.33	136.27	134.28	135.64
150 min	119.20	131.86	112.00	136.57	134.50	134.61
165 min	123.27	132.92	114.67	135.75	134.09	135.02
180 min	127.93	131.41	113.67	135.48	132.99	133.78

Figure 1: Detailed PPG data of 6 breakfast categories.

Two notable phenomena emerge from these data:

1. The PPG difference for two liquid-phase foods, namely egg drop soup and cabbage tomato soup, falls within the range of 5-9 mg/dL, while the other four solid-phase foods exhibit differences in the range of 21-26 mg/dL.

As an example, from the author's observations in his more than 8,853 meals and post-meal glucose experiments spanning eight years, it is established that the body takes about 10-15 minutes to reach the glucose peak for high-sugar content food intake, approximately 45 minutes for liquid food types, and 60-75 minutes for solid food types. Of course, for individuals with severe diabetes and impaired pancreatic beta cells, insulin production may not be functioning correctly. This hypothesis sheds light on the author's perspective regarding how the brain orchestrates communication between the stomach and liver via the nervous system, ultimately governing glucose production within the 180-minute period following the first bite of food.

Figure 2 presents a visual representation of the data, focusing on the upper three curves of 27 home pan-fried egg breakfasts, 80 McDonald's egg breakfasts, and 233 McDonald's breakfasts, which are clustered around the green curve representing all 632 breakfasts. In contrast, the liquid-phase foods, 15 egg drop soup and 3 cabbage tomato soup, exhibit lower glucose curves. The lower PPG levels associated with liquid-phase foods may be attributed to the brain perceiving them similarly to tea or water, thus not signaling the liver to respond with glucose production.

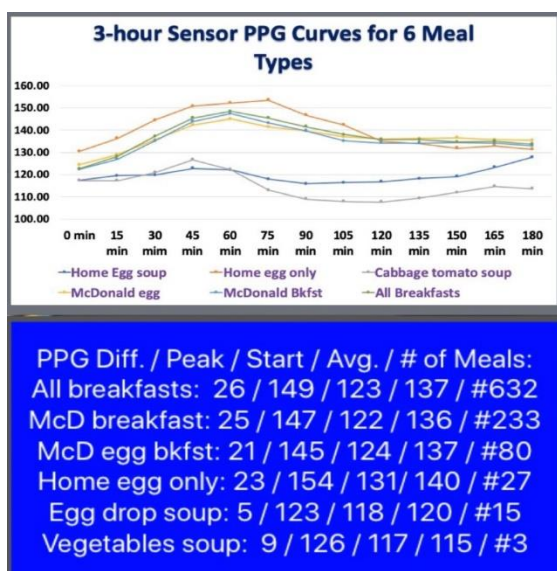


Figure 2: Sensor PPG curves comparison of 6 breakfasts.

Figure 3 delves into the detailed glucose data of two distinct curves, both containing identical food nutrition ingredients but prepared using entirely different cooking

methods, egg drop soup and pan-fried egg. This particular discovery prompted the author to contemplate the brain's functioning in relation to various food categories for his comparative study.

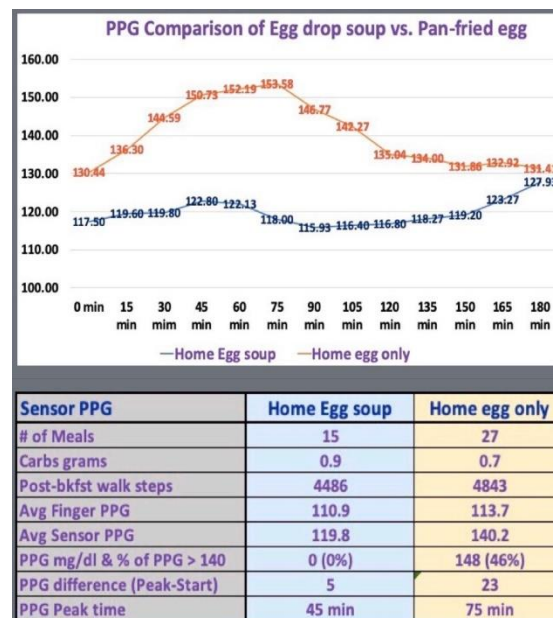


Figure 3: Sensor PPG curves comparison between pan-fried egg (solid) and egg drop soup (liquid).

The author intends to continue experimenting with consuming more egg drop soup and cabbage tomato soup, and he encourages other type-2 diabetes (T2D) patients utilizing CGM devices to conduct similar experiments. This collaborative effort aims to gather more glucose data from individuals with differing DNA and different type 2 diabetes conditions.

In conclusion, the author is striving to discover a scientific approach, leveraging his math-physical medicine (MPM) and exploring neuroscience perspectives, to "trick" the brain into reducing glucose production after food consumption, all without altering or compromising the essential nutritional components and balance of the meal. If successful, this method, simply achieved through changes in cooking methods, could potentially assist numerous T2D patients in lowering their peak and average PPG levels without the need to reduce or modify the nutritional content of their meals. It is essential for T2D patients to exercise caution regarding frequent overconsumption of foods with high carbohydrate and sugar contents.

By sharing his research findings with fellow medical research scientists, the author aspires to provide the medical community with explanations or further justifications,

either through different or traditional research methodologies, such as the biochemical medicine (BCM) approach using both biology and chemistry.