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# A Geriatric Study of Self-Recovering Diabetes Conditions (GH-Method: Math-Physical Medicine)

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### Introduction

The author, who is a 73-years-old male with type 2 diabetes (T2D), describes how he reversed his severe metabolic disorder conditions via a stringent lifestyle program which is based on his developed GH-Method: Math-physical medicine.

### Method

The author was diagnosed with T2D approximately 25 years ago in 1995. Fifteen years later, in 2010, his average glucose reached up to 280 mg/dL, where his peak glucose occasionally reached up to ~400 mg/dL, and his HbA1C was 10%. His diabetic complications included five cardiac episodes, without having a stroke, chronic kidney disease, bladder infection, foot ulcer, diabetic retinopathy, and hyperthyroidism. In 2010, when he was 63 years old, three physicians advised him to begin insulin injections which will eventually lead to dialysis treatment. This was his final wake up call. He then decided to rescue his own life through self-study and research on internal medicine, specifically obesity, diabetes, hypertension, hyperlipidemia, heart attack, and stroke; therefore, he focused on the common root cause, which is metabolism improvement and lifestyle change [1].

By the end of 2014, he developed a computerized mathematical model to evaluate his daily metabolism status. In 2015-2016, he further created four prediction tools of weight, fasting plasma glucose (FPG), postprandial plasma glucose (PPG), and HbA1C, with a prediction accuracy of 95% to 99%. He was able to successfully reduce his weight from 198 to 178 pounds, shorten his waistline from 44 to 34 inches, drop his glucose from above 200 mg/dL to approximately 120 mg/dL and decrease his HbA1C from 10% to 7%. His best accomplishment was discontinuing his three diabetes medications on 12/8/2015, which he never took them again.

By 2017, all of his previous diabetic complications have subsided and his medical examination reports have confirmed the same outcomes.

By having his diabetes and its complications under control is an important component; however, by trying to reverse his severe diabetes conditions would be more remarkable. The author is a senior citizen who does not have many years of life left. All of his medical doctors told him that diabetes is a non-reversible and a non-curable disease. He is an obstinate research scientist and

engineer who does not listen to others casually or yield to situations easily; therefore, in early 2019, he decided to launch his own research and experiments with the possibility of self-recovery of pancreatic beta cells insulin production. He used seven different cutting angles as entry points to investigate this difficult subject. By the end of 2019, he already published his first medical paper based on his findings for this research project. Thus far, he has written seven additional medical papers related to this topic. He has finally proven that his pancreatic beta cells are actually repairing itself at a slow rate of ~2.3% per year. It is not much, but at least it is moving in the right direction. As a result, within the last six to eight years, the functions of his insulin production have been repaired and improved by 14% to 18% [2].

Since 1/1/2012, he measured his finger glucoses four times a day, once for FPG, and three times for PPG. In addition, from 5/5/2018, he utilized a CGM sensor device to collect ~80 glucoses per day. In summary, he has already collected ~75,000 glucose data and ~2 million data of his lifestyle detail for his medical research. Therefore, as of early 2020, he decided to further prove his findings on the pancreatic beta cells self-recovery by conducting one specific biophysical experiment on his own body.

During the early period of 2012-2014, whenever he ate a meal containing “starchy” ingredients, such as wheat, flour, bread, noodle, rice, grains, and potato, his PPG would increase to ~200 mg/dL, with no exceptions. Therefore, for the following 6-years from 2015 to 2020, he avoided them entirely. The past 5-months in the COVID-19 quarantine period (since 1/19/2020), he decided to conduct a special physical experiment on his body. He started to eat toast and kept all the related records about its biological behavioral and physical phenomena associated with this particular meal. He then utilized his GH-Method: math-physical medicine approach to analyze all of these specific dataset.

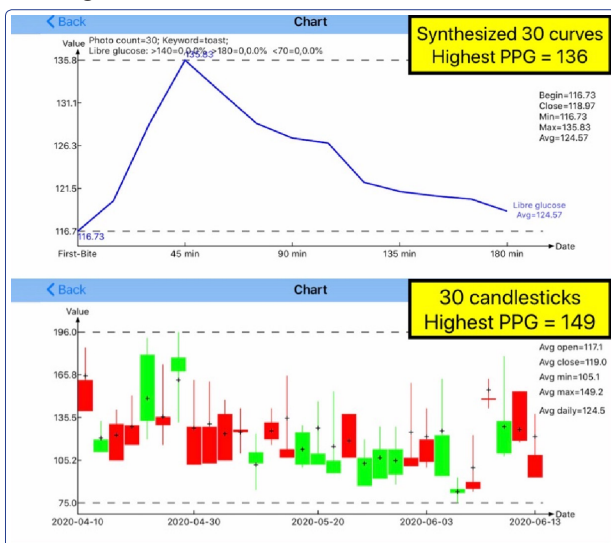
### Results

As shown in Figure 1, a photo of toast meals, he had a total of 30 meals with toast along with small quantity of vegetables which have a reasonable amount of carbs/sugar, or with high protein food, such as egg and seafood, with no carbs/sugar. These 30 toast meals have an average finger-pierced PPG of 110.6 mg/dL. His average carbs/sugar intake amount of 21.4 grams, and his post-meal walking of 4,208 steps.



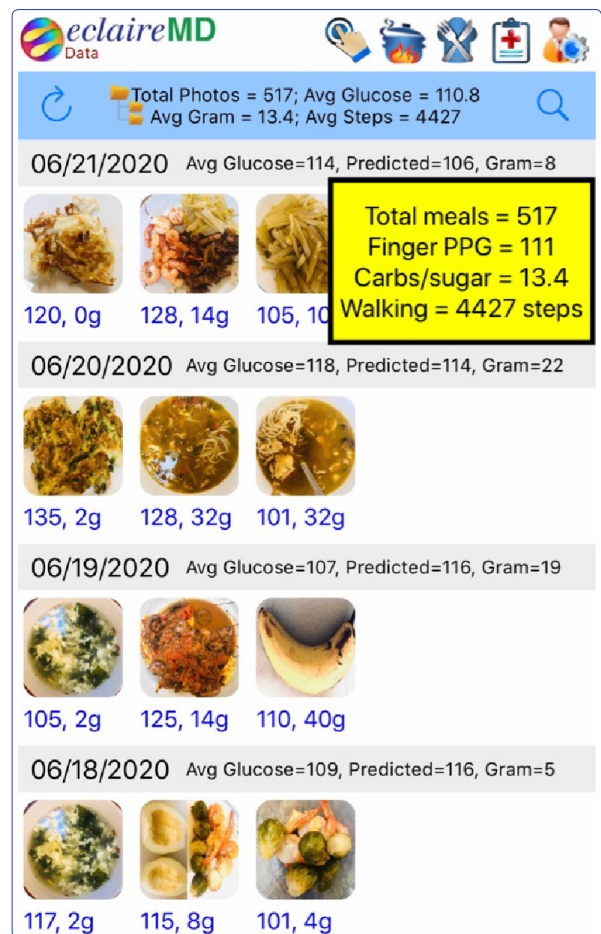
**Figure 1:** 30 toast meals (1/1/2020-6/21/2020)

Figure 2 shows primary characters of PPG, such as its waveform (i.e. a curve over three-hours period), maximum value, minimum value, and average value. The top diagram reveals a “synthesized” PPG waveform from 30 toast meals, whereas the bottom diagram depicts these 30 individual candlesticks [3]. There are some small deviation existing between the primary values of these two diagrams which resulted from different numerical calculation process and different time instants. The most important characteristic is the maximum (i.e. highest) PPG values which are 136 mg/dL for synthesized PPG curve and 149 mg/dL for 30 individual PPG candlesticks (from time domain over 172 days). These highest PPG values of 136-149 mg/dL are much lower than his previous highest PPG record of around 200 mg/dL resulted from starchy food during 2012-2014.



**Figure 2:** Synthesized PPG curve ad 30 Candlesticks Chart

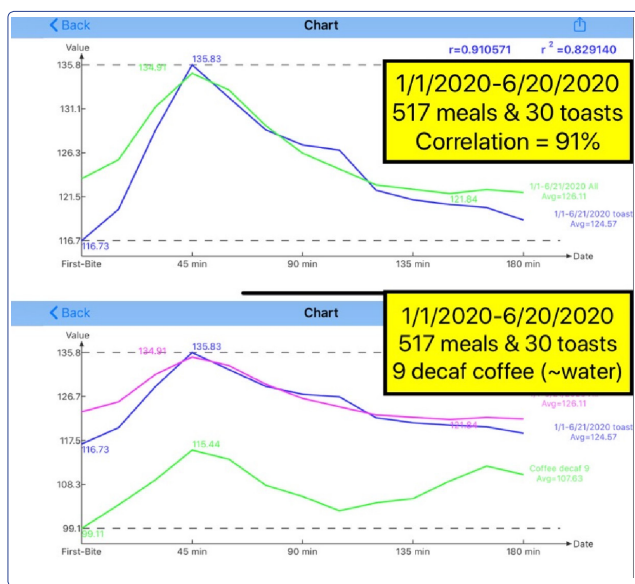
As shown in Figure 3, a photo of total meals, he had a total of 517 meals with a variety of food ingredients. These 517 total meals during the period from 1/1/2020 to 6/21/2020 have an average finger-piercing PPG of 110.8 mg/dL. His average carbs/sugar intake amount of 13.4 grams, and his post-meal walking of 4,427 steps. These 517 total meals’ finger PPG and post-meal walking steps are similar to those 30 toast meals, except for the carbs/sugar amounts which are 13.4 grams for total meals and 21.4 grams for toast meals. Toast meals carbs/sugar amount is 60% higher than average total meals. If using a linear amplification rate for his calculation, the toast meals finger PPG should be  $110.6 * 1.6 = 177$  mg/dL (with a condition associated with highly damaged pancreatic beta cells) which is fairly close to his early PPG records of around 200 mg/dL during 2012-2014. This finding proves that his beta cells have been self-repaired during the past 6 to 8 years.



**Figure 3:** 517 total meals (1/1/2020 - 6/21/2020)

Figure 4 illustrates a comparison among 30 toast meals, 517 total meals, and 9 decaffeinated coffee. First, in terms of PPG waveform comparison, both toast meals and total meals have remarkably similar waveforms (i.e. curve patterns) with a very high correlation coefficient of 91%. This phenomenon means that there are no differences between average toast meals and average total meals. The total meals’ synthesized peak PPG is 135 mg/dL while the toast meals’ synthesized peak PPG is 136 mg/dL. This also means that toast does not have a significant impact on his recent synthesized PPG profile in 2020, or his body is starting to treat toast just like any other regular food. Any normal person without diabetes should have seen this observed “calm” physical phenomenon due to the existence, strength, and capability of a better situation of insulin production. This physical evidence

further confirms self-recovery of his damaged pancreatic beta cells over the past 6 to 8 years.



**Figure 4:** Comparison among toast, total meals, & decaf coffee

Figure 4 illustrates a comparison among 30 toast meals, 517 total meals, and 9 decaffeinated coffee. First, in terms of PPG waveform comparison, both toast meals and total meals have remarkably similar waveforms (i.e. curve patterns) with a very high correlation coefficient of 91%. This phenomenon means that there are no differences between average toast meals and average total meals. The total meals' synthesized peak PPG is 135 mg/dL while the toast meals' synthesized peak PPG is 136 mg/dL. This also means that toast does not have a significant impact on his recent synthesized PPG profile in 2020, or his body is starting to treat toast just like any other regular food. Any normal person without diabetes should have seen this observed "calm" physical phenomenon due to the existence, strength, and capability of a better situation of insulin production. This physical evidence further confirms self-recovery of his damaged pancreatic beta cells over the past 6 to 8 years.

Furthermore, he places his recent PPG results from the 9 decaffeinated coffee meals, which is similar to water intake, along with 30 toast meals and 517 total meals [4]. It is evident that the decaffeinated coffee serves as the "lower bound" of the other meals which have different degrees of carbs/sugar intake, including toast meals.

## Conclusion

This simple biophysical experiment and its related mathematical analysis have provided more physical evidence of reversing the diabetes disease, at least it can be improved through self-repair of the damaged pancreatic beta cells insulin function, even for a 73-year-old, the author himself.

Many senior citizens are suffering from diabetes and dying from its complications. The author's own experiences and research results have proven that seniors, like me, cannot give up. There is hope and available ways to improve our general health and medical conditions, which he believes is the underlying fundamental spirit of the geriatric research and practice that is to prolong one's life through health improvement.

Life is precious and good health is important. Having a long and healthy life is a dream for everyone. This article provides one more logical insight and practical ways to achieve longevity.

## References

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