mg/dL of his PPG level, in a near constant conversion rate. His post-meal walking steps have been maintained at a rate of approximately 4,300 steps per meal. Since his exercise is a constant, he conducted a variance study of three conversion rates from each carbs/sugar gram to PPG mg/dL level that is 1.8, 2.0, and 2.2 mg/dL per gram.

From 2016 to 2017, he discovered a solid connection between his FPG and his weight (>90% of correlation). In addition, similar to his PPG research, he also recognized that there are about 5 influential factors of FPG formation with weight alone contributing ~85% and cold weather temperature influencing ~5%.

Since July 2019, he launched his investigation on the degree of damage to his pancreatic beta cells. During this one-year of research task, he noticed that his FPG has been decreased in the past 6 to 8 years at an annual rate of 2.3% to 3.2%. In other words, his pancreatic beta cells have been self-regenerating approximately 14% to 26% for these past years. He then thought about FPG as being a good indicator on how healthy his pancreatic beta cells are since there are no food intake and exercise while sleeping. It makes sense that FPG carries a significant and clear message about the baseline status of his overall glucoses. This is how he decided to use FPG to convert into his "baseline PPG".

In early 2015, he further utilized 8 influential factors with AI and optical physics technologies to develop an AI-based Glucometer APP to predict PPG [4]. This APP can automatically guesstimate the carbs/sugar amount from the meal photos he took, where each photo contained 160 million digits of information. The AI predicted PPG values have reached to a 99.9% prediction accuracy based on his measured PPG values from his 5,640 meals data (Figure 1).
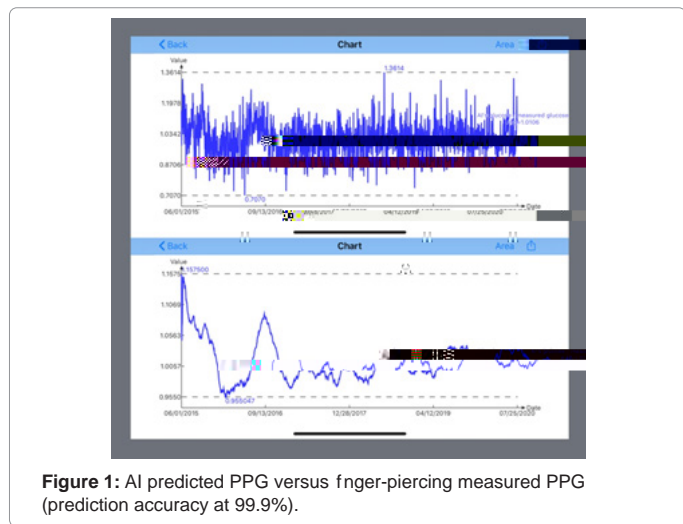

Figure 1: AI predicted PPG versus finger-piercing measured PPG (prediction accuracy at 99.9%).

Result

The author then utilized his acquired diabetes knowledge and his own collected big data of 5,640 meals in 1,880 days to identify the best-estimated values for baseline PPG from FPG times multiplier 3 (m3), Carbs/sugar amount times multiplier 1 (m1), and Post-meal walking steps times multiplier 2 (m2). He further verified the validity of the equation by calculating their linear accuracies (must be greater than 95%) between measured PPG data versus both AI-based PPG and Formula-based PPG predictions.

Next, he describes his developed formula-based linear equation to simulate the complex PPG phenomena as follow:

Formula of predicted PPG=(FPG*m3)+(Carbs/Sugar grams*m1)-(Walking Steps in 1,000*m2)

Where FPG times m3 is the baseline PPG which indicates his recent stabilized health state of pancreatic beta cells. The three variables, m1, m2, and m3, are three conversion multipliers. The m2 value is fixed at 5.0, where m1 values are using three values of 1.8, 2.0, and 2.2, which will then obtain three calculated m3 values that are equal to 0.97, 0.945, 0.92 respectively, to keep the formula's PPG prediction accuracy above 99.8% (Figure 2).
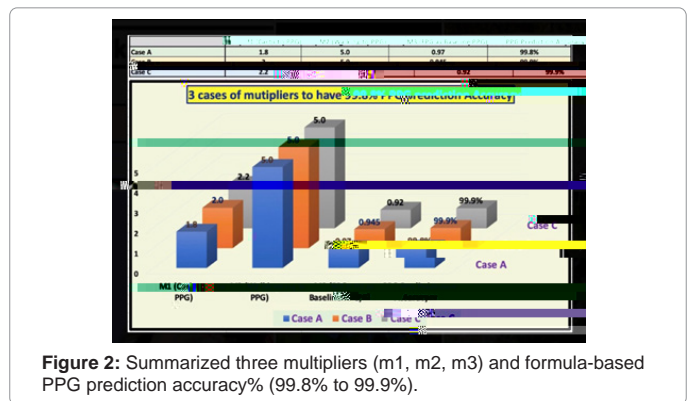

Figure 2: Summarized three multipliers (m1, m2, m3) and formula-based PPG prediction accuracy% (99.8% to 99.9%).

Based on the above description, there are three different calculation data tables with three-line curves of measured PPG, AI-based predicted PPG, and formula-based predicted PPG (Figures 3-5).
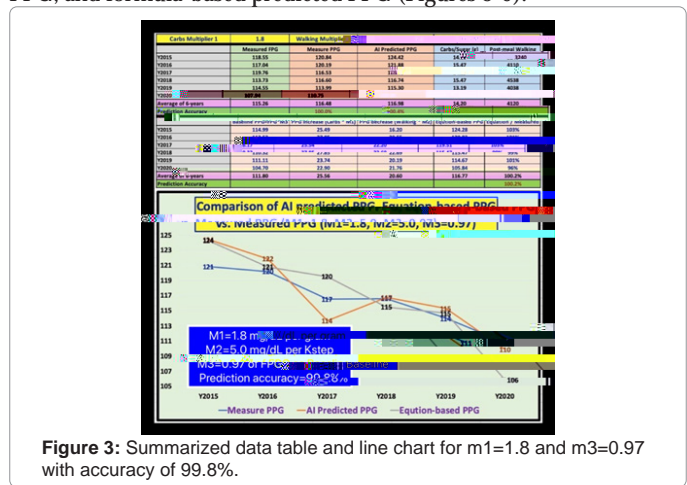

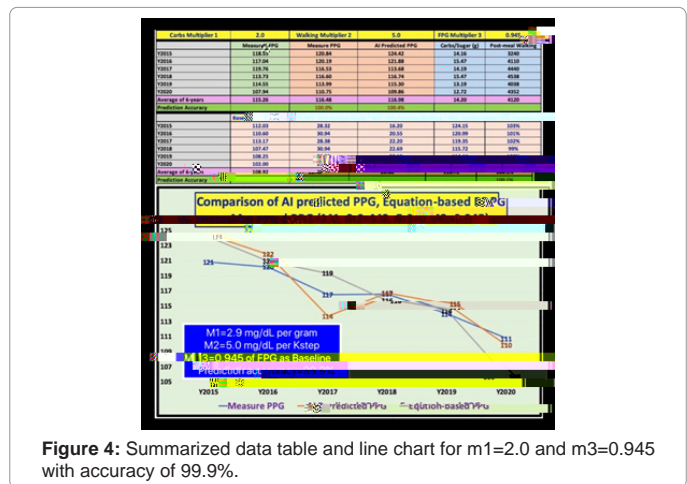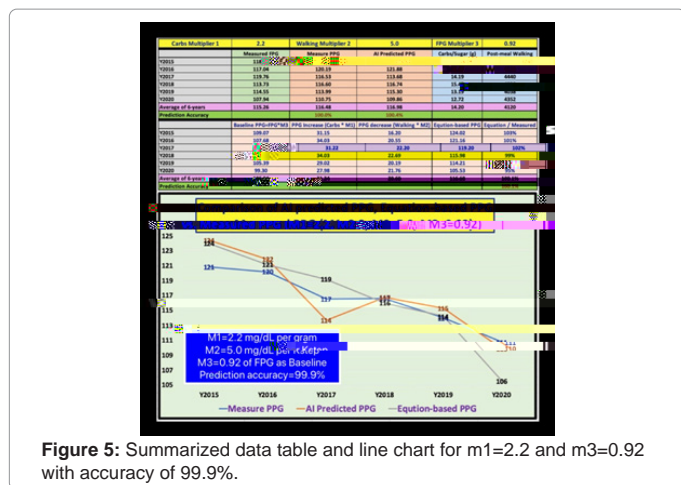**Figure 3:** Summarized data table and line chart for m1=1.8 and m3=0.97 with accuracy of 99.8%.

Figure 4: Summarized data table and line chart for m1=2.0 and m3=0.945 with accuracy of 99.9%.

Figure 5: Summarized data table and line chart for m1=2.2 and m3=0.92 with accuracy of 99.9%.

e following list summarizes these three gures with the conclusive results in the order of values m1/m2/m3/prediction accuracy%:

Case A:1.8/5.0/0.97/99.8%

Case B:2.0/5.0/0.945/99.9%

Case C:2.2/5.0/0.92/99.9%

Concl ion

e predicted postprandial plasma glucose, PPG formula-based on the status of fasting plasma glucose (FPG), carbs/sugar intake amount, and post-meal walking steps are as follows:

Predicted PPG=0.97*FPG+(carbs/sugar grams*1.8)-(post-meal walking steps in thousand*5)

e conclusive results have the order of values m1/m2/m3/pred c on accuracy%.

Case A:1.8/5.0/0.97/99.8%

Case B:2.0/5.0/0.945/99.9%

Case C:2.2/5.0/0.92/99.9%

Exercise is important (~3% higher contribution than food) and is easily achieved compared to the required knowledge of diet. As a result, the author spent four years to study food nutrition. Most T2D patients are seniors; therefore, he suggests that walking is the best form of exercise. However, the most di cult part of exercise is the behavior psychology related to the issue of "discipline and persistence". T2D

patients need to walk between 2,000 to 4,000 steps a er each meal. e author walks an average of 4,300 steps a er each meal. On the other hand, diet (carbs/sugar amount and nutritional balance) requires much more and deeper knowledge of food nutrition in order to control diabetes. erefore, the author developed an AI-based tool to assist T2D patients.

For non-tech patients, the following simple guidelines can assist with meal intake:

Starchy food:

Eat an amount half of your st or hand at most.

Colorful vegetables:

Eat an amount limited to one st or hand.

Green vegetables:

Eat an amount limited to 2.5 sts or hands.

Please note: you must combine two types of vegetable together in order to get the total intake limitation.

e author highly recommends the patients to measure their FPG at least several times a quarter, in order to get a quarterly average FPG value. e Eru]s.9(t)6(er)4(l)7612(f v)8rp8(eu94.9 in,9n-(l)15dⅩ il(0.5(r)1(n)