

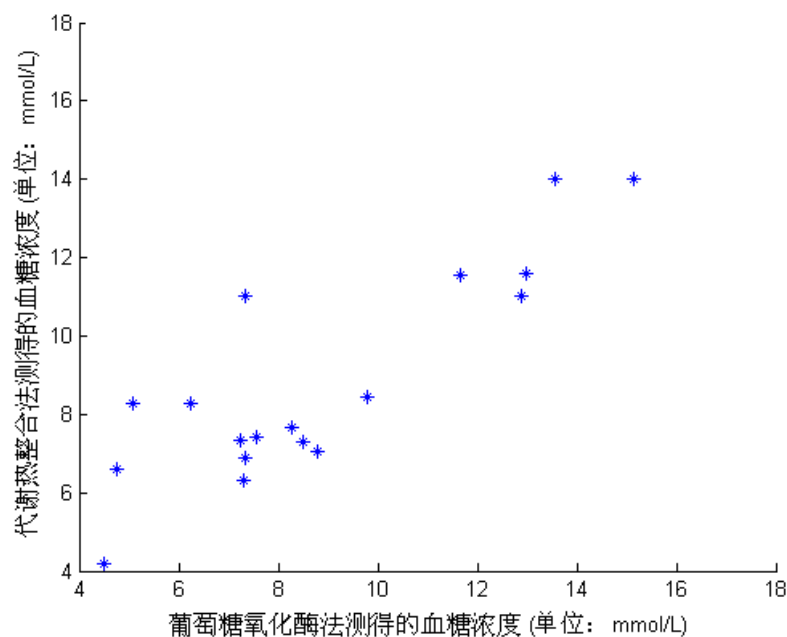
Non-invasive Blood Glucose Detector utilizing Metabolic Heat

Conformation Method

Hospital/Clinical Test Report

- Experiment: Non-invasive Blood Glucose Detector based on Metabolic Heat Conformation Method;
Location: 301 Hospital (PLA General Hospital), Beijing.

A joint collaboration between 301 Hospital(PLA General Hospital) Beijing and Beijing Tsinghua University Infirmary. Participants of the experiments are patients diagnosed with diabetes. Graph 1 shows the comparison between the metabolic-optical method developed and biochemical analyzer used in hospital. In this experiment, we successfully collected a total of 18 fasting glucose samples, including 10 males and 8 females, age ranging from 28 to 68; diabetics suffered for less than 15 years. Room temperature is 25~29 °C, outside temperature 21~33°C.



Graph 1. Showing the Non-invasive Blood Glucose Experiment Result

X-axis denoting Blood Glucose Concentration tested using Glucose Oxidase Method (in mmol/L)

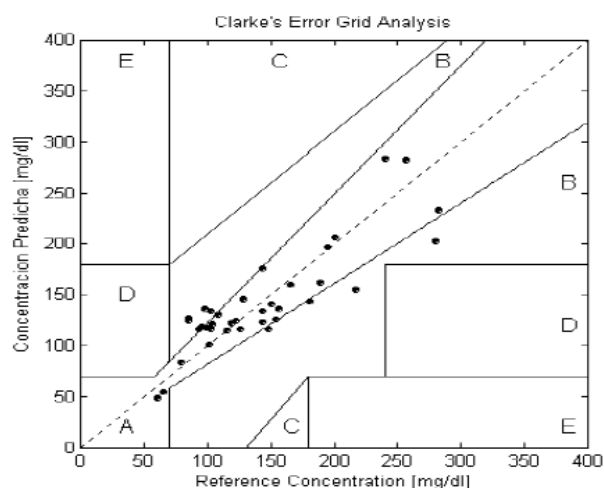
y-axis denoting Blood Glucose Concentration tested using Metabolic Heat Conformation Method(in mmol/L)

Relevant Coefficient $R=0.856$, Linear dependence significance is high, thus we are able to prove that non-invasive blood glucose detection using metabolic heat conformation method is highly achievable.

- Experiment: Non-invasive Blood Glucose Detector based on Metabolic Heat Conformation Method;

Location: Haidian Hospital, Beijing.

Using the non-invasive blood glucose detector developed, the participants involved 27 volunteers and tested for blood glucose for 108 times. Age ranging from 16~74 years old, involving 12 males and 15 females. Their blood glucose ranging from 50~320mg/dl. Utilizing standard linear regression analyzation method and the test data collected to estimate blood glucose calculation model coefficient and compared with referencing blood glucose. During the experiment, aside from collecting referencing blood glucose data, insulin data is collected. To show that insulin indeed cause an effect, from the experimental data, we estimated a simple curve involving the change of interstitial tissue in insulin. After considering the insterstitial tissue in insulin, forecast result is shown in graph 2:



Graph 2 shows the Clarke's Error Grid, the forecast result of change of interstitial tissue in insulin

X-axis denotes the reference concentration in mg/dl

Y-axis denotes the concentration prediction in mg/dl

The similarity coefficient $R=0.8666$. Area A contains 33 samples, and area B contains 11 samples, thus demonstrating the importance of change of interstitial tissue in insulin.

● Conclusion

Due to limitation of requirement, measurement tracking of a single subject is not allowed, that is because everyone's physiological state differences will cause the system to react differently and accordingly, thus affecting the accuracy of the end result. Removing the anomaly of physiological state, for example, and does the measurement tracking of a single subject, the system's test accuracy can be higher.