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GLUCOSAGA: PROTOTYPE OF NON-INVASIVE BLOOD GLUCOSE CHECK THAT INTEGRATED WITH APPLICATION IN SMARTPHONE

Ayu Rahmawati Kautsar Dieni[a], Nurul Fajriati Setyaningrum[a], Atika Nurul Haniyyah[a], Ardi Yusri Hilmi[a] and **Abdullah Ibnu Hasan[a]**
[a]Gadjah Mada University, Indonesia

Diabetes is a chronic metabolic disease that is hard to be cured. Diabetes management could be done by self-monitoring blood glucose and lifestyle controlling. Blood glucose could be monitored with glucometer but it is not pleasant for patient because of the high cost of tools component, the complexity of operating procedure, and the invasive treatment by pricking lancets into finger. Also, glucometer does not help patient to control their lifestyle yet. The purpose of this PKM-KC is to create a prototype of non-invasive glucose monitoring tool that is integrated with Andorid application. Post-prandial blood glucose test and randomly blood glucose test are conducted in vivo method by flashing the low part of ear using green LED. Light transmission is received by photodiode and processed by signal processor circuit. Then it is changed to ADC value by Arduino Nano microcontroller. Correlation test is conducted to find the correlation between blood glucose and ADC value by plotting curve method on Microsoft Excel 2013. The result showed randomly blood glucose test using Glucosaga prototype has R2=0.53, while two-hour post-prandial blood glucose has R2=0.49. This result could be sent by Module Bluetooth HC-05 to Glucosaga application so the data could be saved and processed to control the lifestyle. The device has been well-operated as expected.