ABSTRACT

Diabetes is a desease that has been extended in the world. The symptoms of diabtes can be indicated by measuring blood glucose level in the body. Patients with diabetes need to measure blood glucose regularly. Currently, the measurement of glucose is still using an invasive, It is disturbing for patients comfort, so it takes a non invasive to measure blood glucose. Photoplethymography is a method can perform measurments of blood glucose levels in non invasive.

Design photoplethysmograph in this study used configurations with infrared transmission wavelength of 1450nm as a light source and a receiver phototransistor, and mikroprossesor 328p as the conversion to digital. This research was conducted digital signal conditioning and data processing with matlab 2015b. Testing tools is done by measuring the blood sugar levels in probandus and see the relationship with peak-to-peak.

The test results showed that the intensity of the light received by the phototransistor is represented by the value of the peak to peak on the output voltage will change in line with changes in blood glucose levels, follows the equation $Y = 11.033x - 85.348$. The coefficient of $R^2 = 0.95$ indicates that x major effect on y. Values tool accuracy is 98.07%.

Keywords : *Photoplethysmography, glucose, peak-to-peak*