

Abstract

Spectrophotometry is a method of measuring how much a chemical absorbs light by measuring the intensity of light as a beam of light passes through a sample solution. The basic principle is that each compound absorbs or transmits light at a certain wavelength range. This study aims to analyze the ability of LEDs as a light source in spectrophotometers. In this study, the authors have determined the parameters of blood sugar as the test material. So that the determination of LED wavelengths as a light source must be adjusted to the specifications of wavelengths in the manual procedures of reagents used. In the BAV Greiner Glucose Reagent procedure, the allowed wavelength is between 500 - 570 nm with a cuvette thickness of 1 cm. Measured against reagents blank by endpoint method. From these references, the author used an LED light source with a wavelength of 530 nm green Epistar brand. The module in this study consisted of a 530 nm LED light as a light source then added a lens to focus the light beam. The author also added slit / aperture or can be called a small hole so that the passing light is focused at one point of the circle and is missed to the cuvette. The results of light absorption will be received by the light sensor (photoresistor) and processed data by Arduino and the results are displayed to the Display. From the results of this study obtained a range of error values of 1% to 3% when tested with the brand Analyticon type Biolyzer100 spectrophotometer tool with 6 different samples and performed looping 5 times each. From the data obtained that LED's with a wavelength of 530 nm are effective as a light source for blood sugar checks.

Keywords: 530 nm LED, Lens, Glucose Reagent, Cuvette, Photoresistor, Biolyzer 100.