Assessing the Potential of Colocasia esculenta Starch Extract as a Serum Separator Gel in Quantitative Random Blood Glucose Determination and Total Cholesterol

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Abstract:

Serum separator tubes are used in routine chemistry tests due to its convenience with rapid coagulation and separation of red cells and serum. Previous studies have utilized root crop vegetables with thixotropic properties in producing an alternative serum separator gel. However, problems regarding the ideal gel concentration, density, storage conditions, clotting time, and analyte stability are encountered. Moreover, incorporation of a preservative to contribute to alternative gel viability were previously recommended. The study assesses the potential of *Colocasia esculenta*, otherwise known as taro, as a serum separator gel in quantitative random glucose determination and total cholesterol in comparison to the standard gold serum separator tube, along with the incorporation of medical-grade silicone oil as a possible preservative. Glucose and cholesterol analytes from the gold top and alternative gel tops with and without oil were determined utilizing enzymatic methods such as glucose oxidase-peroxidase and cholesterol esterase, respectively. The data yielded was subjected to parametric and non-parametric tests to determine and compare the significant differences to the standard gold top with regards to specific absorbances and corresponding concentrations. Upon evaluation, there is a significant difference between the standard gold top and alternative gel tops in random glucose determination. On the other hand, there is no significant difference between the alternative gel tops with the standard gold top in determining total cholesterol. The researchers recommended further determination of efficient conditions with gel preparation, serum separation, centrifugation time and speed, storage conditions, chemical analysis and incorporation of other preservatives.

Keywords:

Colocasia esculenta, alternative serum separator gel, taro starch, glucose, total cholesterol.