



اُونِيُوَرْسِيْتِي تِيكْنُوْلُوْجِي مَآرَا  
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MARA

THE USE OF IMMATURE RETICULOCYTE FRACTION AS A TOOL FOR  
CLASSIFICATION OF ANEMIA

By

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**Thesis Submitted in Partial Fulfillment of the requirements for  
Bachelor of Medical Laboratory Technology (Hons),  
Faculty of Health Sciences, Universiti Teknologi MARA**

**2016**

## DECLARATION

“I hereby declare that this thesis is my original work and has not been submitted previously or currently for any other degree at UiTM or any other institutions.”



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**PROJECT TITLE :** THE USE OF IMMATURE RETICULOCYTE FRACTION AS A TOOL FOR CLASSIFICATION OF ANEMIA

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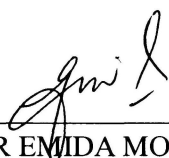
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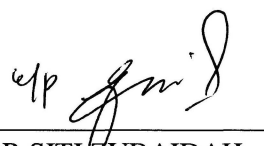
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## ABSTRACT

Anemia is a blood disorder and the major source of morbidity which is related to impaired oxygen delivery, decrease exercise tolerance and reduce the quality of life in older adults. It can be characterized based on the routine hematological parameter from full blood count test followed by differential diagnosis. However, differential diagnosis incur extra cost and time. The present study aims to look into the possibility of using an additional parameter called immature reticulocyte fraction (IRF) to further refine the classification of anemia prior to differential diagnosis. Data collection performed in Hospital Tengku Ampuan Rahimah (Klang) based on the full blood picture report from November 2015 till December 2015 were analyzed. The data were obtained from four groups of anemia patients consisting of anemia in pregnancy, beta thalassemia, hereditary spherocytosis and iron deficiency anemia. The hematological parameters tested were hemoglobin, total red blood cell, hematocrit, reticulocyte and immature reticulocyte fraction. The correlation between IRF and the other hematological parameters was studied. IRF was correlated to all tested parameters for the beta thalassemia group and do not have any correlation for the group of anemia in pregnancy. Hereditary spherocytosis showed correlation between IRF and red blood cell while iron deficiency anemia showed correlation between IRF and all the hematological parameter except red blood cell. Among the hematological parameter tested, only hemoglobin, hematocrit and red blood cell have significantly different mean value among the anemia group tested. Hence, IRF cannot be used for classification of anemia. Instead, hemoglobin, red blood cell, and hematocrit may have better potential to be used as additional tools for differentiation of the different groups of anemia.

Keywords: anemia, immature reticulocyte fraction, full blood picture