

# Usefulness Of New Hematologic Parameters In Hemoglobin Disorders

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## Citation

S Sugaroon. *Usefulness Of New Hematologic Parameters In Hemoglobin Disorders*. The Internet Journal of Tropical Medicine. 2004 Volume 2 Number 2.

## Abstract

Thalassemia and Hemoglobinopathy is the disease transmitted by autosomal recessive genes. The research conducted in Thailand found the prevalence of thalassemia genes in various parts of the country such as  $\alpha$ -thalassemia 1 trait found in Bangkok around 35 %, Chiangmai 12 %. However, the  $\alpha$ -thalassemia 2 trait found a bit lower than the previous ones especially in Bangkok found only 16%, Chiangmai 19% respectively. For  $\alpha$ -thalassemia found in Bangkok 3 % ,meanwhile it was found in Chiangmai 9%, northeastern part 2-3%. Hemoglobin E is one of the prominent abnormal hemoglobin in Thailand and acting itself as  $\alpha$ -thalassemia trait found in Bangkok 13-17%, northeastern part 32-60% .The percentage will be increased because those who carry thalassemia genes move around the country as migrants and get marry finally their offsprings will affect with thalassemia and some of them are silent carriers. This phenomenon will be occurred repeatedly. Nowadays, the ministry of health has set a program so called non infectious diseases control. The control will be useless if there is no effective procedures in identifying carriers.

Recently, Technicon has used Flow cytometry combined with the fluorescent staining can categorize reticulocyte into L retic, M retic and H retic and reticulocyte indices such as MCV, CHCM, RDW, HDW, CH and CHDW respectively. We have ever used these parameters in identifying couples who have had their offsprings affected with thalassemia H ( genotype:  $\alpha$ -thalassemia 1/  $\alpha$ -thalassemia 2). We found that almost all parameters can be used as a tool in identifying  $\alpha$ -thalassemia 1 carriers with significant difference ( $P < 0.05$ ) when compared to normal control group. Unfortunately,  $\alpha$ -thalassemia 2 carriers have only 5 parameters been

significant difference when compared to normal control. However, it needs further evaluation in a large number of patients and in other forms of thalassemia , iron deficiency and anemia secondary to chronic diseases.

## Figure 1

Table 1: Significant difference of reticulocyte parameters between  $\alpha$ -thalassemia 1, 2 and control group.

Parameters	Significant difference comparing to controls	
	$\alpha$ -thalassemia 1	$\alpha$ -thalassemia 2
Retic %	Yes	No
L retic %	Yes	Yes
M retic %	Yes	Yes
H retic %	Yes	Yes
MCVr fl	Yes	Yes
CHCMr g/dl	Yes	No
RDW r%	Yes	No
HDW r g/dl	Yes	No
CHR pg	Yes	Yes
CHDW r pg	No	No

This is the data trying to convince the use of the machine that is worth a lot. I do hope the research on these parameters will go deeply or being modified for use as diagnostic tool. However, we have recently developed PCR for identification of these carriers successfully, it still takes time. In the place where the machine is available it can identify the carriers within minutes.

## References

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