วารสารเทคนิคการแพทย์ เชียงใหม่
BULLETIN OF CHIANG MAI MEDICAL TECHNOLOGY
Vol. 6 No. 1
January 1973

# CIRCULATING RETICULOCYTES IN NORMAL ADULTS

By

Viriya Silpachai, B. Sc. (Med. Tech.)*

Damrong Pinthanond, B. Sc. (Med. Tech.)**

Panja Kulapongs, M. D., Dip. Amer. Bd. Ped**

## Abstract

Circulating reticulocytes in 50 normal men and 50 normal women were determined by the new methylene blue and brilliant cresyl blue methods. The mean values were slightly higher in brilliant cresyl blue method, and also higher in women than men. With new methylene blue method, the mean value for men is 0.37 ± 0.24% (95% limites = 0.1 - 0.8%); for women is 0.40 ± 0.33% (95% limits = 0.1 - 1.0%).

## INTRODUCTION

Circulating reticulocytes as measured by the reticulocyte count has been widely used as an index of the erythropoietic activity. Since its introduction by Brecher in 1949 (1), the new methylene blue method for reticulocytes staining has gained wider acceptance and is considered to be superior and more accurate than the brilliant cresyl blue method. Recently Deiss et al (2) has reported the astonishingly high value of reticulocyte count in normal adults using the new methylene blue method. It is our purpose to study the reticulocyte values in normal Thai adults with the above 2 conventional methods.

## METERIAL AND METHODS

The normal adult population were the 100 healthy, non-anemic medical technology students, technicians and medical students in the 20 to 40 year age range. The staining of reticulocytes with new methylene blue and brilliant cresyl blue was performed as described by Brecher and others. (3)

## RESULTS

Reticulocyte counts determined by the new methylene blue were lower in men than in women. (Tables I and II)

* Women's Hospital, Bangkok.

** Dept. of Clinical Microscop, Program for the Faculty of Associated Medical Sciences, Chiang Mai University.

**TABLE I: RETICULOCYTE COUNTS IN 100 NORMAL ADULTS USING NEW METHYLENE BLUE METHOD.**

| Reticulocyte count | Men (50) | Women (50) |
|---|---|---|
| Mean | 0.37% | 0.40% |
| S. D. | 0.24 | 0.33 |
| 95% limits* | 0.1–0.8% | 0.2–1.0% |
| Observed range | 0.1–0.9% | 0.1–1.1% |

* Theoretical 95% limits is calculated from the fomula : $\pm 2\sqrt{\frac{R\,(100 - R)}{N}}$

Where R is the reticulocyte count in percent.

N is the number of red cells examined.

**TABLE II: RETICULOCYTE COUNTS IN 100 NORMAL ADULTS USING BRILLIANT CRESYL BLUE METHOD**

| Reticulocyte count | Men (50) | Women (50) |
|---|---|---|
| Mean | 0.46% | 0.51% |
| S. D. | 0.33 | 0.36 |
| 95% limits | 0.2–1.1% | 0.2–1.2% |
| Observed range | 0.1–1.5% | 0.1–1.5% |

Tho bimodal distribution of the individual observations is evident in both sex groups.

## DISCUSSION

The reticulocyte values reported here are slightly lower than those cited in the literature (2). The higher value obtained from the brilliant cresyl blue method is in agreement with previous observations (2,4) and necessitates the establishment of separate "normal" values for each method and probably for different locality. It is not apparent why reported normal values vary so greatly. One factor is the lack of uniform criteria for identifying reticulocytes. It is our practice to identify a cell as a reticulocyte if it contains at least a single appropriately-stained inclusion. The other reason is the minimal interference by the siderotic granules in our population.

## REFERENCES

1. Brecher, G. : New methylene blue as a reticulocyte stain. Am. J. Clin. Path. 19 : 895, 1949.
2. Deiss, A., and Kurth, D. : Circulating reticulocytes in normal adults as determined by the new methylene blue method. Am. J. Clin Path. 53 : 481, 1970.
3. Kulapongs, P., and Seang—Udom, C. : Clinical Pathology Laboratory Manual. 1971.
4. Mackinney, A.A., Jr., Morton. N.E., et al . Ascertaining genetic carriers of hereditary spherocytosis by statistical analysis of multiple laboratory tests. J. Clin. Invest. 41 : 554, 1962.