

EXPECTED VALUE OF SERUM FERRITIN BY RADIOIMMUNOASSAY: A STUDY IN 80 THAI HEALTHY MALES

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ABSTRACT

Serum ferritin determination is a useful test for determination of iron deficiency. The radioimmunoassay test is a widely used method to determine serum ferritin. Due to the fact that each laboratory should set its own reference value, therefore, we performed this study. Here, we reported the expected range of serum ferritin among 80 healthy Thai subjects. The average level of ferritin was 24.50 ± 9.57 ng/ml. The expected range for our subjects are 22.39 – 26.61 ng/ml.

Key words: ferritin, RIA, expected value

INTRODUCTION¹⁻³

Ferritin is a large protein shell (MW 450,000) comprised of 24 subunits, covering an iron core containing up to 4000 atoms of iron. Ferritin acts as the soluble storage form of iron in tissue (hemosiderin is relatively insoluble). It may serve other functions as well although these are controversial. It is found in most cells of the body, especially macrophages, hepatocytes and erythrocytes. Synthesis occurs in the liver and the rate correlates directly with the cellular iron content.

There are iron- and cytokine-responsive elements in ferritin mRNA. Increased iron or cytokines (such as IL-1, IL-6) promotes ferritin translation, resulting in increased iron storage. This is one of the causes of iron "sequestration" that occurs in animals with chronic or inflammatory disease and will reduce serum iron values.² The function of serum ferritin is not known, but

the concentration correlates well with the amount of stored iron in normal (and most diseased) subjects. Serum ferritin concentrations are quite stable with lower diurnal rhythm effect, in contrast to serum iron.

Concerning measurement: of ferritin, sensitive methods are needed, since serum levels are very low. Immunologic assays requiring species-specific reagents, such as RIA and ELISA, have been employed.¹ Here, we reported the expected value of serum ferritin by RIA method among healthy Thai adult males.

MATERIALS AND METHOD

SUBJECTS

This study was designed as a descriptive study. Eighty healthy Thai male subjects were

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assessed. All subjects were Thai adults and lived in rural area. Fasting blood sample from each subject was collected using vacuum tube 5 milliliters as clotted blood. Physicians also performed physical examination on all subjects. Those subjects who had abnormal results from examination were also excluded. The protocol of this study was approved by the Ethical Committee of Faculty of Medicine, Chulalongkorn University.

LABORATORY ANALYSIS

Each collected specimen was analyzed for serum ferritin by RIA method (CIS Biointernational) at the Nuclear Medicine Unit, Department of Radiology, Faculty of Medicine, Chulalongkorn University.

STATISTICAL ANALYSIS

A. Setting of the reference values

The reference values in this study are

Table 1. Statistical data of ferritin determination.

Mean (ng/ml)	SD (ng/ml)	Maximum (ng/ml)	Minimum (ng/ml)
24.50	9.57	41.70	5.11

DISCUSSION

Ferritin is a protein in the body that binds to iron. Most of the iron stored in the body is attached to ferritin. Ferritin is found in the liver, spleen, and bone marrow. Only a small amount is found in the blood. The amount of ferritin in the blood may help to indicate the amount of iron stored in the body. This test is most commonly done on a blood sample taken from a vein. Less commonly, the amount of iron in the body can be evaluated during a bone marrow analysis.^{1,3}

primarily assumed as the expected value. The mean, standard deviation (SD), range of subjects were calculated. The expected values in this study were accepted at mean \pm 95% confidence interval.

RESULT

A total of 80 subjects were analyzed. The average level of ferritin was 24.50 ± 9.57 ng/ml. The mean, standard deviation (SD), range of subjects were calculated and presented in Table 1. The expected range for our subjects are 22.39 – 26.61 ng/ml.

in this study can be applicable. Although the oriental life-style is different from the western way, but because of the globalization, some western life styles such as eating behaviors are introduced to Thailand. Results in this study can well reflex this fact.

Here we derived the expected value for the Thai males as 22.39 – 26.61 ng/ml. Comparing our references to the previous reports.⁴⁻⁵ the similar trend can be observed. However, our references is lower than those of the Thai children⁶ (Expected range for serum ferritin level for the healthy control from this study was 67.895 to 96.692 ng/ml). This finding can showed the fact that the serum ferritin in adult is usually lower than the children.

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