

Thesis Title The Comparison Between Serum Vitamin B12 Concentrations in Adults with and without Metabolic Syndrome

Author Ajirapa Bussaracom

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Advisor Vitoon Jularattanaporn, Ph. D.

ABSTRACT

The metabolic syndrome is defined as several developed cardiovascular risk factors, such as insulin resistance, obesity, dyslipidemia, and hypertension. Epidemiological data from countries around the world show that people in almost every age group can have vitamin B12 deficient, especially patients with type 2 diabetes. Several studies have found that decreased serum vitamin B12 concentration are more common in metabolic syndrome individuals. There is evidence suggests that low status of vitamin B12 may lead to adiposity, dyslipidemia, vascular endothelial dysfunction, glucose intolerance, and insulin resistance, which have been involved in the pathogenesis of metabolic syndrome.

Objectives: This study was aimed to compare the serum vitamin B12 concentrations between in adults with and without metabolic syndrome and compare the serum vitamin B12 concentrations between metabolic syndrome parameters including fasting blood sugar and lipid profiles.

Material and Methods: The method was conducted in 52 participants separated into 2 groups as metabolic syndrome and non-metabolic syndrome with a cross-sectional study design. Subjects were measured the body composition (anthropometric

measurements) and collected intravenous blood sample (20 mL) by trained medical staffs after a 10- to 12-hour fast.

Results: The result of this study is that adults with metabolic syndrome and non-metabolic syndrome have no difference in serum vitamin B12 concentrations, according to NCEP ATPIII criteria, using Mann–Whitney U test ($p<0.05$). However, there was a significant difference in serum vitamin B12 concentrations and total cholesterol levels. Serum vitamin B12 in subjects with high cholesterol level (≥ 200 mg/dL), which mainly comes from patients with dyslipidemia, was lower than subjects with normal cholesterol level (<200 mg/dL).

Conclusion: In conclusion, adults with metabolic syndrome and non-metabolic syndrome have no difference in serum vitamin B12 concentrations. Though, serum vitamin B12 concentrations are significantly different between subjects with high cholesterol and normal cholesterol levels.

Keywords: Metabolic Syndrome, Fasting Blood Sugar, Lipid Profiles, Vitamin B12