A STUDY OF THE ASSOCIATION BETWEEN SELENIUM AND CARDIOVASCULAR DISEASE IN LAMPUNG, INDONESIA

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Abstract. Selenium deficient areas have been associated with a higher prevalence of cardiovascular disease in some countries. In this study, we investigated the correlation between cardiovascular disease prevalence and selenium concentration in paddy soil and rice grains, the main staple food in Lampung, Indonesia. Paddy soil and rice samples ($n_s = 35$) from eight regencies ($n_d = 8$) in Lampung were analyzed for selenium content. The prevalences of heart disease, stroke, and hypertension in those regencies were obtained from the Ministry of Health of Indonesia. The Shapiro-Wilk's test was used to examine the data distribution. The Pearson's correlation was used to examine the correlation between cardiovascular disease prevalence and selenium concentration in the paddy soil and rice grains. Heart disease prevalence was negatively correlated with the selenium concentration in the paddy soil (r = -0.77, p = 0.02) and rice grain (r = -0.71, p = 0.05). A negative correlation was seen for stroke prevalence and selenium concentration in paddy soil (r = -0.76, p = 0.02). Hypertension prevalence was negatively correlated with the selenium concentration in the rice grains (r = -0.83, p = 0.01). These findings suggest that the selenium concentration in paddy soil and rice grains in the Lampung area may play a role in the fact the area has the lowest cardiovascular disease prevalence in Indonesia.

Keywords: selenium, cardiovascular diseases, paddy soil, rice grain, Indonesia

INTRODUCTION

Cardiovascular disease (CVD), a non-communicable disease (NCD) is a leading cause of death among humans. NCDs have been prioritized as an urgent public health problem by the United Nations (UN) (WHO, 2015). CVD is comprised of diseases of the circulatory system (WHO, 1990). The major risk factors for cardiovascular disease are tobacco use, physical inactivity, and an unhealthy diet (WHO, 2015). By 2030, CVD is projected to be the number one cause of death in Indonesia, with a projected 23.6 million deaths by that year, primarily due to heart disease

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