I. INTRODUCTION

A. BACKGROUND

Cardiovascular Diseases (CVDs) is now the leading cause of death in global societies. In 2003, World Health Organization reported that more than 17 million people or about 29.2% of global population died from CVDs (7.2 million from coronary heart disease, 5.5 million from cerebrovascular disease, 4 million from hypertension, and the rest from other kind of CVDs). From those numbers, 80% case is happening in developing countries. The main causes of diseases are the change of lifestyle and diet. Diet which is rich in fat, especially saturated one, and simple sugar, smoking, and less sport or physical activity (sedentary lifestyle) are part of lifestyle which causes the risk of degenerative disease become bigger.

Coronary heart disease (CHD) is the most common cause of death in Indonesia, representing 26.4% of death in 2001 (Sarimawar, Irianto, & Mulyono 2003). The major risk factor of CHD is the raised blood cholesterol as the impact of perennially unhealthy lifestyle and diet. According to clinical trials and epidemiological studies, there is a positive correlation between Low Density Lipoprotein Cholesterol (LDL cholesterol) level and CHD (Klingberg 2012). High level of blood cholesterol could also leads to other diseases, such as cancer and diabetes.

Lowering cholesterol level is currently one of the most efficient and effective way to prevent or reduce the risk of CHD and other CVDs (Normen, Frohlich, & Trautwein 2004). Gould et al. (1995) estimated that reduction of blood cholesterol by 10% could reduce the CHD death risk by 13%. One of the compounds that have the cholesterol-lowering ability is plant sterols. With certain mechanisms, plant sterols can reduce cholesterol absorption in the intestine, thereby reducing blood LDL cholesterol levels. Although plant sterols which existed naturally in plant based daily food such as vegetable oils, cereals, and nuts may have a minimal effect in cholesterol-lowering, the supplemental doses of plant sterols are required to achieve optimal and significant reductions in serum cholesterol (Piironen & Lampi 2004; Carr et al. 2010).

Law (2000) researched that the addition of plant sterols to margarine can lower blood LDL cholesterol levels of 0.54 mmol/l to subjects aged 50-59 (14%), 0.4 mmol/l to subjects aged 40-49 (9%), and 0.33 mmol/l to subjects aged 30-39 (11%). Meanwhile, Clifton et al. (2004) reported that milk, yogurt, bread, and breakfast cereals fortified by 2.6 grams plant sterols esters can lower LDL cholesterol significantly by 15.9%, 8.6%, 6.5%, and 5.4%, respectively. Based on other trials, the efficacy for plant sterols and stanols in lowering LDL cholesterol by 8-13% can be obtained by intakes ranging from 1.8-2.5 g plant sterols or stanol/day in the corresponding food (Law 2000; Carr et al. 2010).

To further research about plant sterol efficacy for health and its application as functional food ingredient in Indonesia, an up-to-date data about plant sterols dietary intake is required. This study was conducted to obtain daily plant sterols intake, determine the consumption pattern of food containing plant sterols, and examine the relationship between the plant sterols intake and blood cholesterol levels in Bogor rural area. The results of this study are expected to be the initial data for further research on development of functional foods fortified by plant sterols as a prevention of cardiovascular disease in Indonesia, especially coronary heart disease.
B. RESEARCH OBJECTIVE

Main Objective
This research was conducted to obtain data about plant sterols intake and its relationship with total blood cholesterol in the Bogor rural area.

Specific Objectives
1. Identifying the socioeconomic characteristics (sex, age, education, type of job, income per capita, and family size) of respondents.
2. Identifying the nutritional status through anthropometry (body mass index), blood pressure, and blood cholesterol level of the respondents.
3. Determining the plant sterols dietary intake of the respondents.
4. Finding the major source of plant sterols consumed by the respondents.
5. Examining the relationship between plant sterols intake and total blood cholesterol level of respondents.

C. RESEARCH BENEFIT

This research was expected to provide the picture of plant sterols intake from daily consumption in Indonesia and its relationship with total blood cholesterol as the baseline to further research of plant sterols application for health. Thus, the results of this research can be a part of the cardiovascular disease prevention in Indonesia, particularly coronary heart disease, by using plant sterols as functional food ingredients.