NUS Graduate School for Integrative Sciences and Engineering
Research Project Write-up

Title of Project: Dietary intakes, biomarkers, and genetic susceptibility in relation to risk of coronary heart disease in Singapore Chinese

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Short Description

The prevalence of obesity, dyslipidemia, hypertension, and type 2 diabetes is increasing rapidly in many Asian countries resulting in increases in the incidence of coronary heart disease (CHD). Dietary factors are known to play a role in the aetiology of CHD, but more detailed knowledge on the role of specific foods and food components is needed for effective dietary recommendations and industrial modifications resulting in healthier foods. To date, knowledge on the relationship between diet and risk of coronary heart disease is mostly based on studies in western populations. Few large-scale prospective studies of diet and CHD have been conducted in Asian populations where dietary patterns are very different. We therefore aim to study intake of macronutrients and their major food sources in relation to incidence of coronary heart disease in Singapore Chinese in a nested case-control study. The aims of this project are:

1). To evaluate how dietary intakes including the types of fatty acids, carbohydrates, and protein and their food sources are related to risk of CHD in Singapore Chinese. We will use both self-reported information on diet and plasma biomarkers of dietary fatty acids.

2). To evaluate to what extent association between diet and coronary heart disease are mediated by blood pressure, blood lipids, hyperglycaemia, and chronic inflammation. We will also study how genetic variation in pathways related to lipid and carbohydrate metabolism affect these biological risk factors and incidence of coronary heart disease to obtain additional evidence for causality of the effects of diet.

3). To estimate the proportion of cases of CHD that could potentially be prevented by changes in dietary intakes and other lifestyle factors as well as changes of different magnitudes in biological CHD risk factors. This information can be used to prioritize public health interventions.