DETERMINATION OF ANTIOXIDANT ACTIVITY AND SUGAR CONTENT OF DIFFERENT TYPES OF COMMERCIAL COCOA PRODUCT

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ABSTRACT

DETERMINATION OF ANTIOXIDANT ACTIVITY AND SUGAR CONTENT IN DIFFERENT TYPES OF COMMERCIAL COCOA PRODUCT

This study is aim to determine antioxidant activity and sugar content in different types of commercial cocoa product. The antioxidant activity was determined using β-carotene bleaching assays and reducing power. The total phenolic content was measured by Folin-Ciocalteau and sugar content was determined using HPLC. The samples used such as milo powder and milo instant powder, vico powder and vico instant powder, and also ovaltine powder and ovaltine instant powder. In β-carotene bleaching assays, vico powder exhibit highest antioxidant activity (64.05±0.53%). Followed by milo powder and milo instant powder, ovaltine powder, vico instant powder and ovaltine instant powder (exhibit lower antioxidant activity). For reducing power, milo powder and vico powder exhibit high antioxidant activity and ovaltine instant powder exhibit low antioxidant activity. The total phenolic content (TPC) was express as gallic acid equivalents mg GAE/ 100 g. Ovaltine instant powder exhibit high phenolic content which is 3.99±0.17 mg GAE/100 g. While milo powder and ovaltine powder exhibit lower phenolic content about 1.91±0.07 mg GAE/100 g and 1.95±0.02 mg GAE/100 g. Type of sugar that common present in all samples is sucrose, glucose and fructose. Milo instant powder contains high sucrose content among all samples. Milo powder contains high glucose content and vico powder contains high fructose content. There are moderate positive correlation at 0.05 level between sucrose content and β-carotene bleaching assays ($r = 0.53$). There is low correlation between fructose and β-carotene assays ($r = 0.24$). Correlation between sucrose and fructose with reducing power are negligible. For glucose, the correlation between both antioxidant assays is negligible.

CHAPTER 1

INTRODUCTION

1.1 Background

Nowadays cocoa was being the commercial product and can be found in different types such as powder (beverage), solid, semi-liquid and liquid (syrup) form. It have been commercialize because of the request from the consumer. Cocoa (*Theobroma cacao L*) is particularly rich in polyphenols (Wollgast & Anklam 2000). Oligomers cocoa polyphenol have been reported to protect against peroxynitrate-dependent oxidation and nitration reaction (Kris-Etherton and Keen 2002). Antioxidant which bring the meaning of additive that have capability to prevent, delay or inhibit oxidation by retard the initiation of oxidation chain reaction due to presence of the oxygen. Osman *et al.* (2004) reported that phytochemicals with antioxidant potential that containing in foods have powerful protective towards the effect of major disease risk, including cancer and cardiovascular disease.

In class of instant beverages, (cocoa) powder simply added with sugar and / or milk powder (Shittu and Lawal 2007). So meaning that sucrose or table sugar may high in the product. As reported by Misnawi *et al* (2002) the predominant