I. INTRODUCTION

A. BACKGROUND

Tea is globally one of the most popular and lowest cost beverages, next only to water. Tea is consumed by a wide range of age groups in all levels of society. The tea plant (Camellia sinensis) has been widely used for over 5000 years for its specific aroma, taste, and putative positive physiological functions. According to statistics from the Food and Agricultural Organization (FAO) of United Nations 2008, production and consumption of tea are steadily increasing. The worldwide production of tea in 2006 reached up to 3.60 million ton and the worldwide consumption reached up to 3.64 million ton. Over past decade, world tea consumption has increased by 2.7% annually. The main tea-producing countries are China, India, Sri Lanka, Kenya, Turkey, Indonesia, and Vietnam, which accounted for 28.73, 25.93, 8.60, 8.59, 5.49, 5.15, and 3.65%, respectively, of the 2006 output of total global tea production (Hicks, 2008).

Freshly harvested tea leaves are processed differently to produce specific types of tea such as green, oolong, and black tea. Of all the tea consumed in the world, 78% is black tea, 20% is green tea, and 2% is oolong tea. The green tea consumption in Indonesia was 3.13 thousand tons in 2005, while black tea consumption was more than green tea consumption, 67.9 thousand tons in 2005. FAO projected that world green tea production would grow at a faster rate than black tea by 2.0% annually, to reach 1097.7 thousand tons by 2016 (Ho et al, 2005). Green tea is heated and dried to avoid enzymatic oxidation. Green tea contains polyphenols, and most of the green tea polyphenols (GTPs) are flavonols, commonly known as catechins. Tea polyphenols have been known for their antioxidant activity and antimutagenic and anticarcinogenic properties (Yang et al 2007).

Traditionally, tea is prepared from its dried young leaves and leaf buds, made into a beverage by steeping the leaves in boiling water. But today, tea powder is being developed because it has many advantages such as more practical, simple transport economics, and simply to prolong product’s shelf-life. Tea powder could be applied as functional food and as non food product, like handbody, shampoo, and toothpaste. Food products being developed are tea-rice, tea-noodles, tea-cake, tea-biscuits, tea-wine, tea-candy, tea-ice cream (Hicks 1998). There are several method for produce tea powder, one of them is spray drying method.

Spray drying is one-step continuous processing operation that can transform feed from a fluid state into a dried form by spraying the feed into a hot drying medium (Okos et al, 2007). A short processing time, usually between three and thirty seconds and controlled operational conditions make the spray drying as an effective and unique method for various products, especially heat sensitive products and its retaining the high quality properties such as color, flavor, and nutrients.

The quality of a food powder is judged by the amount of physical and chemical degradation occurring during the dehydration process. There are many researches were did by researchers to know the effect of spray drying on powder characteristic. At this research, different of feed concentrations and spray dryer inlet air temperatures were used to evaluate its effects on physicochemical properties of the spray-dried green tea extract. This information
however is necessary to establish processing conditions to produce value-added powder green tea as there is an increasing demand for herbal tea products in the market.

B. OBJECTIVES

The objectives of this research were to investigate the effect of total solid concentration in feed and inlet air temperatures on physical and chemical properties of green tea powder which was produced by spray dryer.