I. INTRODUCTION

A. BACKGROUND

Tea has been consumed worldwide for years and is one of the most popular beverages. Tea is popular because of its unique aroma and characteristic flavor. The taste and flavor of tea are controlled by key chemical components which are volatile terpenes, caffeine, organic acids, and polyphenol (Borse et al. 2002). Recently, popularity of tea has increased due to its potential health benefits against cardiovascular diseases and cancer as well as pharmaceutical activities such as antihypertensive, antiatherosclerotic, hypocholesterolaemic, and hypolipidemic properties mostly from activities of antioxidant flavonoids present in tea (Cheng 2006).

Based on tea manufacturing (fermentation) process, teas from the genus Camellia can be divided into three categories: green tea (unfermented), oolong tea (partially fermented), and black tea (fully fermented). Among all of these, however, the most significant effects on human health have been observed with the consumption of green tea (Cabrera et al. 2006). For green tea manufacturing, freshly plucked tea leaves are immediately steamed or pan-fired to inactivate polyphenol oxidase and native microflora that initiates and catalyses the aerobic oxidation of tea catechins during tea fermentation. Whereas, fresh tea leaves are crushed and allowed to wither to induce oxidation as a part of tea fermentation process prior to drying for the black tea manufacturing process (generally more than 80% fermented). The characteristic reddish-black color, reduced bitterness and astringency, and removal of leafy and grassy flavor are derived from this oxidation process giving black tea a marked distinction from green tea (Cheng. 2006).

Green tea is commonly consumed in form of dried leaf. However, as the development of technology, green tea powder has been improved. Green tea powder has some advantages like easy to be served, easy to handle, and compact form. Production of green tea powder is done through drying process such as spray drying. Spray-drying is a unit operation by which a liquid product is atomized in a hot gas current to instantaneously obtain a powder. The gas generally used is air or more rarely an inert gas as nitrogen. The initial liquid feeding the sprayer can be a solution, an emulsion or a suspension. Spray-drying produces, depending on the starting feed material and operating conditions, a very fine powder (10–50 μm) or large size particles (2–3 mm) (Gharsallaouiet al. 2007).

Decreasing water content and water activity, spray-drying is generally used in food industry to ensure a microbiological stability of products, avoid the risk of chemical and/or biological degradations, reduce the storage and transport costs, and finally obtain a product with specific properties like instantaneous solubility. (Gharsallaouiet al. 2007). However, the drying process can cause some changes in food, such as phytochemical compounds and physicochemical properties which can affect quality of the product.

The quality of a food powder is judged by the amount of physical characteristic and chemical compound of the product which is greatly affected by drying process. There are many researches were did by researchers to know the effect of spray drying on powder characteristic. At this research, different of spray dryer inlet temperature and feed concentrations were used to evaluate its effects on quality of spray dried instant green tea.
powder. 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. OBJECTIVE

The objective of this research is to study effects of inlet temperature and feed concentration on quality of instant green tea powder which was produced by spray drying process.