CHAPTER I

INTRODUCTION

Although spices have been known for centuries, It was not until food technology became a serious field of study in the late 1930's that the conception of soluble spice first originated. Among various kinds of spices, black pepper is by far the world's most important. It accounts for more than one- third of the total world trade in spices. India alone contributes about 25% to 40% of the total world supply and thus occupies a unique position in the international marketing of pepper.

Over the last two decades, there has been an increasing demand for processed spices and products, called "Oleoresin" particularly pepper oleoresin. Pepper oleoresin is prepared from the whole unripe but fully berries, *Piper nigrum* L. (Piperaceae). It is an extremely concentrated, viscous, resinous extract obtained by solvent extraction and containing all the flavoring ingredients of black pepper.

The two main constituents of pepper responsible for its values as food additive are volatile oil which gives the characteristic aroma and alkaloids which give the characteristic pungency (Govindarajan, 1977; Purseglove *et al.* 1981). Pepper has been reported to contain 2-4% (v/w) volatile oil, 5-9% (w/w) alkaloids-mainly piperine, 11%(w/w) protein and up to 65% (w/w) carbohydrate (Youngken, 1950). For pepper oleoresin it has been reported to contain 18-20%(v/w) volatile oil and 34-40%(w/w) piperine as measured by UV-spectrophotometer or 50-55%(w/w) piperine by Kjeldahl method.

Pepper oil is composed of monoterpene hydrocarbon (50-80%) ,sesquiterpene hydrocarbon (20-40%) which appear to possess the main descriable attributes of pepper flavor and small amount of oxygenated terpene compound (less than 4%). The composition of volatile oil has been studies by Gas-chromatography and other modern analytical techniques. High volatile oil content in oleoresin is necessary to get a good quality oleoresin of the desired pleasant aroma.

For pungent principles in pepper, piperine together with other pungent substances present in small quantities such as chavicine, piperidine and piperettine are responsible for the sharp taste and pungency. Since piperine is universally accepted as the predominant pungent principle in pepper, the quality of pepper and also the oleoresin is dependent largely on the piperine content and thus methods for estimating piperine are becoming more important.

In term of available methods, the Kjeldahl method has been widely and frequently practiced. This method, however, measures other nitrogenous and always give high value. Alternatively, the UV-spectrometric method is more rapid and sensitive for the quantitative determinaiton of piperine. The UV-spectrometric method is prefered in piperine analysis because it has been developed for the direct measurement of piperine, reliable under controlled conditions, convenient and time-saving.

Thai black pepper, as compared with other spices produced locally, has been a major exported spice of Thailand. Its total export volume has been increased from 2,000 tons in 1989 to 6,000 tons in 1992. However, there has been a tendency of using more pepper oleoresin instead of pepper in the future since it offer certain advantage over natural ground pepper, such as consistency of quality, free from microorganisms, uniform dispersion in the

product and easy handling and storage. United Stated imports of black pepper oleoresin in recent years have averaged over US $ 30 million anually.

In order to evaluate the possibility of preparing pepper oleoresin from Thai black pepper and yhe quality of the Thai oleoresin product, a technique of producing concentrated oleoresin by a step-wise maceration was developed in this study. The yield of oleoresin obtained from each step was evaluated including volatile oil content and composition as well as the piperine content.