CHAPTER I

INTRODUCTION

Thailand is a cultivated country. Agriculture is the main career of Thai people. Agriculturist needs a high production. Consequently, chemical has become a necessity; especially herbicides. There are many types of herbicides. Glyphosate group is one of the effective herbicides. The formulation of this group consists of glyfosate; *N*-(phosphonomethyl) glycine[1] and surfactant. The normal surfactant in these formulations is polymer. Surfactants are adjuvant which increase diffusive rate of glyfosate into membrane of herbs. These surfactants are alcohol ethoxylate and alkylamine ethoxylate polymers. The efficiency of herbicide relates with amount of glyfosate and surfactants. The basic technique for measuring the molecular weight distribution of polymers is gel permeation chromatography (GPC). In addition, the technique which is become interesting to analyse polymers is mass spectrometry (MS) since this technique is more accuracy and resolution than GPC[2]. Moreover, it can be used for quantitative analysis of polymers. The general ionization source of liquid chromatography/mass spectrometry which was used to quantitative analysis is electrospray ionization (ESI). The ions which occur from electrospray mass spectrometry are multiplet charge species. Consequently, the interpretation from these spectra is complicated. Recently, matrix assisted laser desorption ionization mass spectrometry (MALDI-MS) was used for qualitative and quantitative technique. It produces only singlet charge so it is much easier.

Few researches have been presented about the concept of quantitative analysis of low and high molecular weight compounds by using matrix assisted laser desorption ionization mass spectrometry (MALDI-MS). The principal activity in this area has been reported by Yan *et al*[3]. In their studies, they reported quantitative MALDI-TOF measurements for polydimethylsiloxane (PDMS) of two different molecular weights using

the relative ratio of signal intensities of integrated oligomer distributions for these two molecular weight distributions.

Objectives

The objective of this research is to develop mass spectrometric method as a method for determination of molecular weight distribution and quantitative analysis of alkylamine ethoxylate.

Scope of work

In initial work, the MALDI-TOF MS conditions were studied for determination of molecular weight distribution of alkylamine ethoxylate standard. Then, a developed method will be used for determination of alkylamine ethoxylate in commercial herbicides.