

CHAPTER V

CONCLUSION

In this research, MALDI-MS was developed for determination of molecular weight distribution of alkylamine ethoxylate which is a surfactant in herbicide. The optimum conditions and parameters were studied for determination and quantitative analysis of alkylamine ethoxylate.

The results showed that a dried droplet method is suitable for sample preparation of MALDI-MS analysis, in comparison with a thin layer method. The best analyte-to-matrix ratio was found to be 1:225. The optimal condition for this analysis is; α -cyano-4-hydroxycinnamic acid (CCA) as a matrix and laser power 260 μ J which provided a good MALDI-MS spectrum for determination of molecular weight distribution of alkylamine ethoxylate. Sample loading of 0.5 μ L had more precise than 1.0 μ L. Because of the mixtures which were dropped of 0.5 μ L is homogeneous more than was dropped of 1.0 μ L. And then, the intensities were occurred precisely. Alkylamine ethoxylate standards (TERWET 3780 and RP II) consist of $C_{18}H_{37}N(CH_2CH_2O)_{x,y}H_2$ and $C_{16}H_{33}N(CH_2CH_2O)_{x,y}H_2$ which found to be the same as surfactant in commercial-A, -B, -C and -D. But surfactant in commercial-E consists of alcohol ethoxylate.

The method for quantitative analysis of alkylamine ethoxylate has been developed by preparing of calibration curve which used neurotensin as an internal standard. Calibration curves, which were prepared by this method, were accurate and percent error less than two percent.

Quantitative analysis of surfactant in herbicides samples such as commercial-A, -B, -C and -D from this method were 5.77 ± 0.12 , 9.91 ± 0.08 , 9.90 ± 0.09 and 1.57 ± 0.02 percent by weight, respectively.

It is concluded that MALDI-MS is an excellent method for determination of molecular weight distribution and quantitative analysis of alkylamine ethoxylate. This

method can be used for identification and quantification of surfactant in commercial herbicide.

It is suggested that a developed MALDI-MS method may be used for quality and quantity control of surfactant production. For further work, other polymer surfactants in other herbicide or any in field could be determined and quantified by MALDI-MS.