COMPARISON OF METHODS ON DETECTION OF BISPHENOL A (BPA)

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ABSTRACT

Bisphenol A (BPA) is one of the main component in many plastic product that might be cancerous to human at certain level of consumption. Its endocrine disruptive chemical (EDC) characteristic my cause various kind of health defect such as heart disease, brain malfunction, reproductive disorder and so on at certain level of consumption. Several types of plastic sample from (1-7) number of classification are tested for BPA content which the sample are subjected to high temperature for leaching purposes. There are 3 methods for BPA detection in plastic which are the Iron (iii) chloride test, High performance Liquid Chromatography (HPLC) analysis and Gas Chromatography Mass Spectrometry (GCMS) analysis. From the iron (iii) chloride test the result show no significant finding based on the color of the cotton swab which remain as yellow color for every sample after triplicate run. From HPLC test, some sample such as mineral water bottle, toy gun, sandwich bag, baby bottle, and plastic cup show positive BPA content based on the BPA standard marker. From GCMS analysis the result shows that mineral water bottle, talcum bottle, toy gun, baby bottle, and CD is positive BPA. By comparison HPLC analysis is the best methodology to detect BPA content in plastic

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CHAPTER 1

INTRODUCTION

1.1 BACKGROUND OF STUDY

Major plastic and resin product today contain dangerous endocrine disruptor chemicals (EDC's) which is harmful to human. Usually the existent of this harmful chemicals is being ignore by the consumer as it cannot be seen or detect directly through observation. Plastic based product such as water bottles and food container are vastly produced throughout the world. In fact, it is becoming a trend for people to used plastic based product for every day consumption as it is portable, handy and easy to bring. Other than that, these kind of product are also cheaper and available abundantly.

Generally, people have higher tendency to be exposed with many plastic material in their everyday lives. Such of the plastic material are come from the food and beverages container, toiletry, disposable plate and so on. All of these plastics are made from chemical which sometime can leach harmful chemical through scratch or heat (Breastcancer.org, 2015). A little that everybody know, plastic such as polycarbonate might contain harmful substances such as Bisphenol A which is used as it building material. Through study, certain level of exposure of this chemical might be cancerous to people.

Bisphenol A or BPA is an organic synthetic compound that comes from the group of diphenylmethane derivatives and bisphenols that contain two hydroxyphenyl groups. BPA is commonly used chemical in industries such as plastics and resins since 1960s. BPA can be found in polycarbonate plastic that are often used in containers such as food container, water bottles , and goods wrapping. Other than that, it is also being used as coating inside the metal product such as food and beverages can, bottle tops and water supply line. In fact, in certain dental sealant and composite material may also contain BPA. (Katherine Zeratsky, 2013)