

**“INVESTIGATION OF IONIC COMPOSITION OF LOCALLY
PRODUCED BOTTLED MINERAL WATER AND DRINKING WATER”**

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ABSTRACT

INVESTIGATION OF IONIC COMPOSITION OF LOCALLY PRODUCED BOTTLED MINERAL WATER AND DRINKING WATER

Six different brands of locally produced bottled mineral water and drinking water were analyzed using IC in order to determine the ionic composition in each of bottled water. Cation (Na^+ , K^+ , NH_4^+ , Mg^{2+} , Ca^{2+}) and anion (F^- , Cl^- , SO_4^{2-} , NO_3^- , PO_4^{3-}) were analyzed in each of the bottled water. Sample taken from each of bottled water and were analyzed three times each. More cations and anions were found in bottled mineral water compared to bottled drinking water whereby the results obtained show average concentration of ionic species in bottled mineral water and drinking water followed the order: $\text{Ca}^{2+} > \text{Na}^+ > \text{K}^+ > \text{Mg}^{2+} > \text{SO}_4^{2-} > \text{Cl}^- > \text{F}^- > \text{NO}_3^- > \text{NH}_4^+ > \text{PO}_4^{3-}$. Bottled mineral water has higher average concentration of cations and anions compared to bottled drinking water. The highest average concentration of cations species is Ca^{2+} , 28.785mg/L and for anion species is SO_4^{2-} , 5.317mg/L, both are found in bottled mineral water. Most of average concentrations of cations and anions species found in bottled mineral water and drinking water is within the Food Act and Regulations and as well as National Standard for Drinking Water Quality.

CHAPTER 1

INTRODUCTION

1.1 Background of water

Water is an essential component of life. Water is a molecule composed of two hydrogen atoms and one oxygen atom. It is written in chemical form as “H₂O”. Water is a unique substance that has the ability to form weak bonds known as ‘hydrogen bond’ between separate molecules. The ability to form weak bond gives water unique chemical and physical properties.

Water is found in rivers, in oceans, as vapor in the atmosphere, and frozen within the glacier. Water is even found in groundwater. There are two primary categories of waters; fresh water and salt water. Examples of fresh water sources include most ground waters and rivers. A typical example of salt water is seawater. Human consume fresh water. Salt water can be converted to fresh water through evaporation or specialized filtration processes. Water will naturally cycle between different reservoirs through the hydrologic cycle. Ocean water will be heated by the sun and water will evaporate as water vapor. The water vapor rises into the