

**DETERMINATION OF FURAN IN  
CANNED SARDINE AND CHICKEN CURRY  
BY SOLID PHASE MICROEXTRACTION-  
GAS CHROMATOGRAPHY MASS SPECTROMETRY  
(SPME-GCMS)**

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## ABSTRACT

### **DETERMINATION OF FURAN IN CANNED SARDINE AND CHICKEN CURRY BY SOLID PHASE MICROEXTRACTION– GAS CHROMATOGRAPHY MASS SPECTROMETRY (SPME-GCMS)**

Determination of furan in canned sardine and chicken curry was done by using Solid Phase Microextraction – Gas Chromatography Mass Spectrometry (SPME-GCMS). The optimum extraction temperature and extraction time obtained were 50 °C and 20 min respectively with 75 µm diameter of carboxen / polydimethylsiloxane (CAR/PDMS) fibre used. HP-5 column was used in GCMS and the average peak area of compounds found was determined. There was no furan detected in both samples but furan derivatives were found in canned sardine. The derivatives detected were 2-ethylfuran, 2-pentylfuran, 2-furanmethanol, cis-2-(2-pentenyl) furan and trans-2-(1-pentenyl) furan. 2-ethylfuran was found higher in Sardine B with average peak area of  $233.56 \times 10^6$  compared to Sardine C. 2-pentylfuran was detected higher in Sardine A compared to Sardine B with average peak area of  $114.55 \times 10^6$ . 2-furanmethanol was found only in Sardine C with  $21.89 \times 10^6$  average peak area. Cis-2-(2-pentenyl) furan was detected in all three sardine samples and the highest average peak area was found in Sardine A with average peak area of  $168.28 \times 10^6$ . Trans-2-(1-pentenyl) furan was detected only in Sardine B with average peak area of  $15.54 \times 10^6$ .

## CHAPTER 1

### INTRODUCTION

#### 1.1 Background and problem statement

Eating habits is one of the causes of diseases that affected young generation nowadays. Chemical food safety is an issue that people are interested in. Consumers should be aware of contaminants or chemicals produced during the food processing or storage, such as, acrylamide, polycyclic aromatic hydrocarbons (PAH compounds), benzene and furan (Liu and Tsai, 2010).

Furan ( $C_4H_4O$ ) is a colourless, volatile compound, which is formed during the heat treatment of food and drinks. It is not lost by evaporation, these result in its accumulation (Kim *et al.*, 2010). It is an aromatic heterocyclic compound that is highly volatile with a boiling point of  $31.36\text{ }^\circ\text{C}$  (Jestoi *et al.*, 2009). Furan and its derivatives have been related to the flavour of food and since late 1970s, the presence of furan in variety of food was known (Liu and Tsai, 2010). Furan is present in a wide variety of food such as canned or jarred food containing meat and vegetables, baby food, infant formulas, coffees, beers, soups, sauces and fish as published by the US Food and Drug Administration (US FDA) in 2004.