Organic pollutants (OTCs) have been widely used as synthetic compounds with other applications, including food packaging, cosmetics, and pharmaceuticals. These compounds can be released into the environment through various routes, such as marine discharge, industrial wastewater, and atmospheric deposition. It is widely recognized that OTCs can have significant impacts on human health and the environment, mainly due to their persistent nature and ability to bioaccumulate in aquatic organisms.

This research work is to establish a precise, rapid, and reliable method to study the concentration of OTCs in beverages. 11 types of beverages were tested to check preliminary contamination status of OTCs in the market, which could be polluted by Tin containers. Agilent 7890 Series GC-MS/MS was applied in this research work to establish a precise, rapid, and reliable method to study the concentration of OTCs in beverages. 11 types of beverages were tested to check preliminary contamination status of OTCs in the market, which could be polluted by Tin containers.

**Experimental**

**Chromatographic Parameters**

- GC system: Agilent 7890A
- Column: Agilent HP-5 MS UI capillary column (38 μm x 25 m, 0.25 μm)
- Column temperature: 50 °C (hold 3 min) to 280 °C (hold 1 min)
- Carrier gas: Helium
- Flow rate: 1.1 mL/min
- Injection mode: Splitless, purge on after 1 min
- Injection volume: 2 μL

**Flow rate**

- Carrier gas: Helium 2.25 mL/min
- Nitrogen 1.5 mL/min
- Flow rate: 1.1 mL/min to 10 mL/min

**Ion source**

- Ion source polarity: Positive ion
- Ion source: EI
- Interface temperature: 280 °C
- Collision Gas: Nitrogen 1.5 mL/min
- Quadrupole Gas: He 2.5 mL/min
- Gallium (3[alpha]2): 20 min

**Column temperature**

- Column temperature: 50 °C (hold 3 min) to 280 °C (hold 1 min)
- Carrier gas: Helium
- Flow rate: 1.1 mL/min
- Injection mode: Splitless, purge on after 1 min

**Chromatographic separation results**

GC separation was finished in 22 min with 15 of 17 compounds steadily separated. Although the last two OTCs could not be separated as expected, extraction of transition ions and precise quantitation were accomplished by unique feature of GC-MS/MS given that appropriate ions were selected, extracted and monitored, and meanwhile, upgraded GC and MS parameters were applied.

**Results and Discussion**

Analysis results of 11 Kinds of Beverages

11 kinds of Beverages were tested with above established method for the 17 OTCs among which Dimethyltin and Monobutyltin were detected in two sample, the result shown in figure 6.

Analysis results of 1 Beverage Sample

Beverage samples were spiked with 10 µg/L and 50 µg/L, 2 levels which was precisely and recovery study of the method were conducted. Majority of RSDs were within 10% and recoveries within 70-120%, the result shown in figure 5.

**Tables**

- Table 1: The Linear Range and R2 of 17 Organotin Compounds
- Table 2: Analysis results of 11 Kinds of Beverages
- Table 3: Analysis results of 1 Beverage Sample

**Conclusions**

Agilent 7890B Series GC-MS/MS technique with MRM mode has the advantage of eliminating background interferences, highly sensitive and selective, as that it turned out to be valuable and effective in analyzing 17 OTCs in beverages.