

Analysis of Traditional Chinese Medicine using Gas Chromatography - Mass Spectrometry: Comparison with Modern Medicine

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Structured Abstract

Background: Chinese culture is profoundly rooted in traditional Chinese Medicine (TCM), which has been practiced for hundreds of years. Globally, TCMs, are gaining interest where they are extensively accessible, including online. Because of their popularity, a thorough evaluation of their safety is urgently required. Over the past 20 years, adulteration of the medicinal components of TCMs have been made in a number of developed nations. The most common adulterants reported are steroid, sildenafil, tadalafil, and vardenafil. This study aims to detect and identify compounds in TCM using GC-MS and compare it with compounds in modern medicine.

Methods: A total of 10 sample TCM samples were purchased randomly through online platform with pain relief indication. The sample, weighing 5 gram was extracted by dissolving in 15 to 20 ml of ethanol, homogenized in an ultrasonic bath for 30 minutes, while agitated every 5 minutes, centrifuged for resultant extract and the extract filtered using PTFE syringe filter before running in GC-MS. The GC-MS was utilized to separate and identify compounds in the samples.

Results: This study showed there is the existence of adulterated compounds that were detected and identified in samples using GC-MS. The GC-MS detected an adulterated compounds which are chlorphenamine, acetaminophen, promethazine, diclofenac methyl ester and diclofenac in most of the samples. Sample 1, 4, 5, 7 and 8 contain chlorphenamine. Sample 2 and 3 contain acetaminophen. Sample 9 contain chlorphenamine and promethazine while sample 10 contain acetaminophen, diclofenac methyl ester and diclofenac. This indicates that there is a high probability that traditional Chinese medicine contains adulterant compounds.

Conclusion: In conclusion, there are 9 out 10 samples were detected contained adulterant compound. The results of this study showed that using GC-MS is an effective analytical tool for analysis compounds in traditional Chinese Medicine. This study can be continued by using other instruments such as UPHLC-Q-TOF/MSMS for better and accurate identification of compounds in traditional Chinese medicine analysis.

Keywords: Traditional Chinese Medicine, Gas Chromatography-Mass Spectrometry, adulterant compounds.

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