Summary

WHO Framework Convention on Tobacco Control (FCTC) is an international treaty to protect the next generation’s health from tobacco. WHO Tobacco Laboratory Network (TobLabNet) has been requested to make the standard operating procedure (SOP) for measuring cigarette contents and emissions for implementation of Articles 9 (Regulation of the contents of tobacco products) and 10 (Regulation of tobacco product disclosures) of the WHO FCTC. As a member of the TobLabNet, we have created the SOP08 and 09 for aldehydes and VOCs. This method is possible to simultaneously measure gaseous compounds such as volatile organic compounds, carbonyls and particulate matter such as nicotine and tar in mainstream cigarette smoke.

We try to support testing of novel tobacco products and tobacco related products such as Electronic Cigarette Delivery Systems, to support for policy development on issues related to these kinds of products, and to provide policy guidance to WHO, the government and the general public related to the test results. E-cigarette analysis revealed very large variation in carbonyl concentration among not only different brands, but also different samples of the same product.

The implementation of Articles 9 and 10 of the FCTC will be essential if the long-term objective of reducing the adverse impact of tobacco products is to be achieved.

WHO Framework Convention on Tobacco Control Article 9 &10

Measurement contents

- Tobacco and Cigarette Filter
- Mainstream gases (nicotine, propylene-glycol, and propylene-glycol)nardine, tar, volatile organic compounds (benzene and 3 compounds)
- particulate matter nitrogen
- Tar
- Tobacco-specific nitrosamines gases and volatile compounds
exhaled mainstream
- volatile organic compounds (benzene and 3 hydrogen)

Collection system for e-smoke

• Transfer 1 mL to a 5 mL flask
• Derivatization
• GC/MS

Carbonic anhydride

Cigarette smoke

VOC

Collection of main-stream cigarette smoke with a glass filter and a sorbent cartridge followed by the two-phase one-pot elution method with carbodiimide and methanol. J Chromatogr A 2012 Dec 14;1246:48-55

A part of the Report of the Surgeon General in Japan

Provision of tobacco control training to the public health nurses

WHO Collaborating Centre on Tobacco Testing and Research

Terms of Reference

1. To collaborate and contribute within the WHO Tobacco Laboratory Network (TobLabNet) in particular and the Tobacco Free Initiative within PND in general in the work plan on tobacco product testing and research.
2. By request of WHO, to provide technical training on tobacco content analysis and emissions measurements in WPRO.
3. By request of WHO, to provide technical support to WPRO countries in the testing and measuring of tobacco product content and emissions in WPRO pursuant to the guidelines on Articles 9 and 10 of the WHO Framework Convention on Tobacco Control.

New our methods

1. One collection method in sorbent cartridge (VOCs and Carbonyls, 1 cigarette per 1 analysis)
2. sorbent cartridge and cartridge holder
3. Publication

Chemical compounds from Electric cigarette

Generation of aldehydes from a cigarette

Volatile gaseous compounds and smoke generated from cigarettes

2010τフードフライ

2011τSmoked Tobacco

2013 Smoked Tobacco, no tar

2014Heat-burn tobacco

E-cigarette

Operating Procedure

SOP: Standard Operating Procedure

Previous methods

Two different collection methods in liquid (5 cigarettes per 1 analysis)

New our methods

One collection method

VOCs, Carbonyls

SOP 08 and 09

SOP 08 and 09 Round robin study

Number of cigarettes

- 1 cigarette = measurement of results
- 1 cigarette = measurement of range
- 7 results (5 separate runs)
- Analysis by two laboratories in Japan region
- 35 BZ: benzene, 78 naphthalene, 84 benzo(a)pyrene, 72 naphthalene

Brands: Clink, M4F, Marlboro, Winston

WHO Framework Convention on Tobacco Control

Meeting with WHO Collaborating Centers on Tobacco Product Testing and Research 15-17 September 2015 Manila, Philippines

Next training 23-25 January 2016 Determination of carbonyl compounds from e-cigarette, Wako, Japan

Publications