Moxa Smoke and the Need for Ventilation or Filtration

Moxibustion Overview

In modern U.S. acupuncturists' practices, moxibustion is frequently used as a complement to the practice of acupuncture. Moxibustion is the heating of a point on the skin utilizing "moxa" which is most often composed of the leaf or leaf floss of the *Artemisia vulgaris* (mugwort) plant.

Chinese medicine practitioners utilize moxibustion therapy at acupuncture points to generate far-infrared and near infrared energy to improve health through the modulation of neurotransmitters, changes in blood flow, and gut function along with other health benefits. There are over 45 systematic reviews and meta-analyses of the effects of moxibustion on human health.

Training in moxibustion is required for programs preparing graduates for licensure. ACAOM (the Accreditation Commission for Acupuncture and Oriental Medicine) is the programmatic accreditor for Chinese Medicine programs in the US. ACAOM requires training in moxibustion as part of the training of acupuncturists. (1, 2)

Moxa is generally safe and its use is associated with few side effects. Studies report mostly local adverse effects such as burns and localized skin allergies or general reactions such as headaches and hayfever-like reactions. Studies published in the past 6 years confirm that moxibustion is rarely associated with adverse events. (3-6)

There is no Safety Data Sheet (SDS) for moxa. This is a plant material (leaf), not a chemical. It is not an inherently hazardous material. An individual atypical response is possible from exposure to any plant or food or spice; moxa/mugwort is a plant and has been used in Chinese "tangs" (soups) for centuries.

Moxibustion & Ventilation

Studies on air quality changes associated with burning moxa report that with proper ventilation, the toxicity of moxa smoke is minimal and that using local

exhaust ventilation appears to be an effective strategy for controlling indoor air pollutants generated by moxibustion. (6-12)

Comparing the results of burning moxa on air quality in a hospital setting (10) to the OSHA standards, while burning moxa in clinical settings does cause an increase in some air contaminants, these contaminants remain far below the maximum levels on the OSHA air quality list. Additionally, comparing the chemicals released from burning moxa to that of burning tobacco (13-15), it is clear that moxa smoke is less toxic than cigarette smoke.

Substance	**Maximum concentration of contaminant after burning moxa (10)**	**Concentration found in tobacco smoke (13-15)**	**OSHA Standard**
CO	4.0 ppm	4.8 ppm (14)	50 ppm
CO2	569 ppm	750 ppm	5000 ppm
Aldehyde	0.063 ppm	1 ppm	200 ppm
Volatile organic compounds*	0.37 ppm (Thujone and cineol)	28 ppm (Toluene)	200 ppm (propyl alcohol)
Benzene	0	2.97 ppm (15)	1 ppm

*The pharmacokinetics of cineol suggest it is absorbed through the lungs with a peak concentration after 15-20 min and a half-life of 1.5 hours. (16) Similar data is available for the inhalation of thujone. (17)

Reactions to Moxa Smoke

There have been reports of moxa smoke intolerance and allergies by specific individuals. (3,12) Clinics and practitioners in the US have responded by increasing the use of HEPA filters, increasing ventilation, and investigating the use of "smokeless" moxa for both training and treatment purposes.

Comparison of Ventilation vs HEPA Filtration of Air when Burning Moxa

Ventilation systems move air into and out of rooms. "The ventilation flow rate can be referred to as either an absolute ventilation flow rate in l/s or m^3/s, or an air-change rate relative to the volume of the space." (18) Ventilation can be as simple as opening windows or adding fans that push air out of a room. Or more sophisticated HVAC systems can be used to isolate air from moving from one room to another.

HEPA stands for “high-efficiency particulate air.” A HEPA filter is a type of air filter that works by repeatedly drawing ambient room air through a fine mesh that traps harmful particles such as pollen, pet dander, dust mites, and tobacco smoke and chemicals. (19)

Ventilation of the room in which moxa is being utilized is more effective in removing moxa-related chemicals than a HEPA filter. But either system is better than burning moxa in a room without ventilation or filtration.

Substance	Decrease in concentration due to Ventilation (10)	Decrease in concentration from HEPA filtration (10)
CO	91%	70%
CO2	70%	22%
Aldehyde	79%	13%
TVOCs	41%	35%

CCAOM Standards & Clinical Air Quality Remediation

CCAOM member schools continue to look for solutions to improve ventilation and limit exposure to the moxa smoke for faculty, student interns, and patients in the teaching clinics. To date, schools have attempted to diminish the air quality effects of burning moxa by utilizing HEPA filters in rooms where moxa is used, limiting the use of moxa, and improving ventilation in training clinics. While not completely successful, the amount of smoke and moxa smell circulating throughout clinic buildings has been reduced.

CCAOM CNT Committee Conclusions:

1. Moxibustion is a routine practice for acupuncturists. The use of moxa is associated with known health benefits.
2. Individuals have reported a variety of acute reactions when exposed to moxa smoke.
3. Long term exposure to smoke in any form can cause health problems, particularly in those with chronic respiratory conditions.
4. While the chemicals generally produced when moxa is burned remain lower than OSHA standards for the workplace, it is prudent to reduce exposure to smoke whenever possible.

Therefore:

- We recommend that there be sufficient ventilation utilizing HVAC, exhaust fans, or other methods of mechanical air ventilation where moxibustion is being performed.
- If sufficient ventilation is not possible or is too costly due to the type of building construction, the use of HEPA filters may be sufficient to reduce the health risks associated with repeated or long term exposure to moxa smoke.
- Additionally, we feel additional studies are needed to identify the differences in smoke constituents when different forms of moxa are being burned. We also would like to see studies that look at the effects (if any) of chronic exposure to moxa smoke.

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