



衛生署

Department of Health

Poisoning Watch

Volume 5, Number 1
December 2012

Inside This Issue

Anticholinergic Poisoning

- Introduction 1
- Clinical features of anticholinergic poisoning 1
- Local situation 2
- Prevention and control 6

Anticholinergic Poisoning

Introduction

Among the general public, it is generally considered that Chinese herbal medicines are safe because they are natural in origin. However, some medicinal plants are inherently toxic and may cause harm to humans. In fact, inappropriate use of even non-toxic Chinese medicines can result in adverse reactions.

Anticholinergic poisoning incidents caused by Chinese herbal medicines occasionally occur in Hong Kong. Anticholinergic poisoning is serious and can be life-threatening in severe cases. In this issue, we summarised the local situation of anticholinergic poisoning related to intake of Chinese herbal medicines.

Clinical features of anticholinergic poisoning

Anticholinergic poisoning usually presents with acute onset of nausea, vomiting, dry mouth, flushing, weakness of limbs, palpitation, dilated pupils, blurred vision, dizziness, hand tremor, difficulty in passing urine, etc. Confusion, delirium and hyperthermia may also occur. Severe poisoning may cause convulsion, coma and even death. The patients are usually managed with supportive treatment and close monitoring. Antidotes with good clinical response are available for treatment and may be required by some patients.



衛生防護中心
Centre for Health Protection



For anticholinergic poisoning related to Chinese medicines, the toxic tropane alkaloids such as scopolamine and atropine found in certain medicinal plants are the incriminated substances causing the poisoning. Clinical suspicion is raised when there is a recent history of consumption of herbs temporally related to the onset of signs and symptoms compatible with anticholinergic poisoning. Patients' urine and blood samples and herbal remnants can be sent for laboratory analysis to confirm the presence of tropane alkaloids or their metabolites.

Local situation

During the 5-year period from 2008 to 2012 (up to 21 December), the Centre for Health Protection of the Department of Health (DH) has received a total of 22 reported cases of anticholinergic poisoning caused by intake of Chinese herbal medicines (Table), including seven males and 15 females. There were three small clusters involving a total of eight patients. The remaining were sporadic cases. Overall, their ages ranged from 4 years to 79 years (median: 50.5 years). Their symptoms usually developed progressively over a few hours after herbal ingestion and lasted for a few days. All of the patients required hospitalization. All eventually recovered after treatment and no fatal case was recorded. The diagnosis of anticholinergic poisoning was confirmed by detection of tropane alkaloids in the herbal remnants or the patients' urine samples in all cases. Eighteen patients (81%) purchased the herbs in Hong Kong while the remaining four patients (19%) purchased the herbs from places outside Hong Kong.

Table: Number of cases of anticholinergic poisoning related to Chinese herbal medicines (2008-2012)

Year	2008	2009	2010	2011	2012 (up to 21 Dec)
No. of cases	3	2	3	9	5



The incriminated herbs consumed by 17 patients were identified to be *Flos Daturae Metelis* (洋金花) in nine cases, contaminated *Rhizoma Atractylodis* (蒼朮) in three cases, contaminated *Radix Aucklandiae* (木香) in two cases, unspecified herb belonging to the genus *Datura* (曼陀羅屬) in two cases and contaminated *Radix Strobilanthis Forrestii* (味牛膝) in one case. For the remaining five cases, no specific herb was identified to be the culprit. Among the above Chinese herbs, except *Flos Daturae Metelis* and the herb belonging to the genus *Datura*, all the remaining including *Rhizoma Atractylodis*, *Radix Aucklandiae* and *Radix Strobilanthis Forrestii* should not contain tropane alkaloids which may lead to anticholinergic poisoning. Overall, the occurrence of the cases can be attributed to three underlying causes, namely (i) erroneous substitution resulting in dispensing of wrong herbs (9 cases; 41%), (ii) contamination/quality defect of herbs (11 cases; 50%), and (iii) inappropriate use (2 cases; 9%).

(i) Erroneous substitution

All the nine cases related to erroneous substitution involved the herb *Flos Daturae Metelis*. *Flos Daturae Metelis* is a toxic herb listed in Schedule 1 of the Chinese Medicine Ordinance (Cap.549) and can only be prescribed by a registered Chinese medicine practitioner (CMP). All patients were actually prescribed with the benign herb *Flos Campsis* (凌霄花) which is a Chinese herbal medicine listed in Schedule 2 of the Chinese Medicine Ordinance. However, the toxic *Flos Daturae Metelis* was wrongly dispensed to the patients instead of the benign *Flos Campsis* intended to be prescribed. In most of the cases, *Flos Daturae Metelis* was mislabelled as *Flos Campsis* in the involved herbal shops.



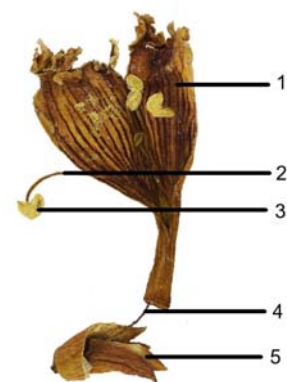
Flos Campsis and Flos Daturae Metelis are two different Chinese herbal medicines with very similar appearances in dried forms (Figures 1&2). Flos Campsis is non-toxic and is indicated for the removal of 'blood-heat', 'blood-stasis' and 'wind'. On the other hand, Flos Daturae Metelis is a potent toxic herb used to relieve cough, alleviate pain and stop spasm. Flos Daturae Metelis contains tropane alkaloids which can potentially cause anticholinergic poisoning if used inappropriately. According to the People's Republic of China Pharmacopoeia 2010, the recommended dosages for Flos Daturae Metelis and Flos Campsis are 0.3 to 0.6 gram and 5 to 9 grams respectively. Thus, if Flos Campsis prescribed according to the recommended dosage range is erroneously dispensed as Flos Daturae Metelis, an overdose of Flos Daturae Metelis of about 8 to 15 times will be resulted. Overdose of Flos Daturae Metelis will lead to anticholinergic poisoning.

Figure 1. Morphology of Flos Campsis

凌霄花(美洲凌霄)
Flos Campsis



Enlarged view of Flos Campsis



美洲凌霄(花)解剖圖

1.花冠 2.花絲 3.花藥 4.雌蕊 5.花萼



(ii) Contamination/quality defect

Eleven cases were due to contamination of benign herbs with plant/herb or substance containing tropane alkaloids, as evidenced by the detection of tropane alkaloids in the herbal samples or herbal remnants. All the herbs listed in the patients' formulae could not account for the presence of the tropane alkaloids.

The herbs found to be contaminated were subsequently identified in six cases, including *Rhizoma Atractylodis*, *Radix Aucklandiae* and *Radix Strobilanthis Forrestii*. *Rhizoma Atractylodis* is a Chinese herb commonly used for the removal of dampness and invigorating the function of spleen. *Radix Aucklandiae* is commonly used for relieving abdominal pain and improving digestion. *Radix Strobilanthis Forrestii* is used to improve circulation, and remove heat and dampness. Upon tracing of the source of the incriminated herbs of these six cases, it was revealed that the contamination had occurred before the herbs were imported into Hong Kong in some cases. For the remaining five cases, the specific herb contaminated by tropane alkaloids could not be identified. As such, the source of contamination remained unknown.

Figure 2. Morphology of *Flos Daturae Metelis*

Enlarged view of *Flos Daturae Metelis*



白曼陀羅(花)解剖圖

1.花冠 2.雄蕊 3.花瓣 4.花藥 5.花萼

花萼成筒狀，長度約為花冠的1/2

洋金花
Flos Daturae Metelis



1 cm



(iii) Inappropriate use

The cause of the remaining two patients who were involved in a cluster was attributed to consumption of an unknown herb believed to belong to the genus *Datura* (*Flos Daturae Metelis* also belongs to this genus). This cluster involved self-prescription without prior consultation with any CMP before preparing the decoction. As there was no formula available, the actual herb used was unknown. One of the patients prepared the decoction using about six grams of the herb. The amount used was much higher than the recommended dosage range of 0.3 to 0.6 gram for herbs belonging to the genus *Datura*.

Prevention and control

CMPs and Chinese medicine traders must exercise caution in differentiating the easily confused *Flos Campsis* and *Flos Daturae Metelis*. The practising guidelines for Chinese medicine wholesalers and retailers require traders to purchase herbal medicines or processed herbal medicines only from reputable suppliers. It also requires the responsible persons to possess adequate knowledge of authentication of processed herbal medicines so as to ensure that the processes of purchasing, supplying and dispensing are correct. Chinese medicine traders have to comply with the requirements including proper storage, labelling and standard naming of herbs. If they process stocks of *Flos Campsis* and/or *Flos Daturae Metelis*, they should make sure that the stocks are of the correct species and are properly stored and labelled. Traders should also retain invoice and other documents of transactions in an orderly manner to facilitate tracking of the source and distribution when an adverse event occurs. Moreover, dispensing of herbs has to be conducted or supervised by approved persons.



Members of the public should consult qualified CMPs before taking any Chinese medicines and should not prepare formulation themselves. Besides, they should purchase Chinese medicines from reliable retailers only and never purchase any Chinese medicines from unknown or doubtful sources. They should seek medical advice as soon as possible if there is any discomfort after taking herbal medicines.

If doctors encounter any poisoning cases suspected to be related to the use of Chinese medicines, they should report the cases to the Central Notification Office of DH (fax: 2477 2770). Upon receipt of the report, a multidisciplinary team which comprises public health physicians, Chinese medicine practitioners, Chinese medicine experts and pharmacists will initiate investigation and implement necessary public health control measures.

Editorial Team:

Dr TH LEUNG, Dr Jacqueline CHOI, Dr Albert AU, Dr Karen CHEUNG, Dr Ada LEUNG, Ms Jamie AU YEUNG, and Mr Vincent CHU