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The Chinese University of Hong Kong
Chinese Medicinal Material Research Centre

Press release
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Chinese University developed instant tests for spot-check of the poisonous herb Gwai Kou

The Chinese Medicinal Material Research Centre (CMMRC) of The Chinese University of Hong Kong (CUHK) has developed two simple methods to distinguish in 1-2 minutes the poisonous adulterant *gwai kou* from the genuine herb *wai ling sin*.

Gwai kou is the root of *Podophyllum emodi*, which contains podophyllotoxin. This poisonous herb has caused a string of 9 poisoning cases in Hong Kong in February and March this year, as a mixture in the herb samples of *wai ling sin*. The same poisonous herb caused 3 poisoning cases last year, 2 in 1989, and several in Taiwan and Kuala Lumpur. The Department of Health has advised all herbshops to stop selling *wai ling sin*.

Dr Paul But, Director of CMMRC, disclosed that his team had developed two reagents, No. 1 and No. 2, for spot check of *gwai kou*. Steps for authentication is to first cut the herbs into segments of about 1 cm, and then split them longitudinally into two halves.

In the first method, a drop of Reagent No. 1 onto the cut surface of the herb will cause an instant appearance of greenish black blotches in *gwai kou* and the cut surface will become dark green in 5-10 minutes. Genuine samples of *wai ling sin* will remain clean and untarnished (diagrams 1-2).

In the second method, the herbs are placed on a filter paper or toilet paper without fluorescence. Addition of a drop of Reagent No. 2 onto the cut surface will immediately lead to a yellow exudate from *gwai kou*, and the exudates appear as yellowish green fluorescence under ultra-violet lights at 254 nm or 365 nm (diagrams 3-4). Genuine samples of *wai ling sin* have no exudate. The herbs can also be soaked in 70% ethanol for about 10 minutes; then place a drop of the ethanol extract on a filter paper or toilet paper without fluorescence, a drop of Reagent No. 2, blow dry, and observe under ultra-violet lights at 254 nm or 365 nm. Ethanol extracts of *gwai kou* will appear as yellowish green fluorescence, and those of genuine *wai ling sin* as purplish blue or greyish blue fluorescence.

The two methods will immediately distinghuish the two herbs. However, Dr But pointed out, the methods should be combined with proper sampling technique, or else *gwai kou* would not be selected and the methods would not be able to identify any adulterant from only genuine samples.

Because preparation of the reagents is rather complicated, and improper preparation would hamper its functions, CMMRC will not disclose the formulae to the public at this stage, but will arrange to supply the reagents direct to herb dealers and authorities in charge of drug control. It will also propose to have the reagents and methods added to the Chinese Pharmacopoeia.

Dr But explained that this project aims to help the herbal industry, support the government in establishing a system and infrastructure for the promotion and regulation of Chinese medicine, and also to expound the objective of the Industry Department in funding CMMRC for the development of quality control methods and standards to support the local manufacturing industry.

In addition to the simple methods, CMMRC has also established more sophisticated analytical methods for detecting podophyllotoxin using such techniques as TLC, HPLC, HPCE and MS/MS. Such methods will be applied in analytical methods requiring different degrees of sensitivity.

Dr But admitted that he himself believes proper use of *wai ling sin* has good therapeutic values, and hoped that the methods would help to catch the adulterants. He further advised that herb dealers should follow the instructions from the Department of Health and not sell *wai ling sin* until further notice.

CMMRC has recently entered into agreement with the National Institute for the Control of Pharmaceutical and Biological Products (NICPBP), to collaborate in research and development for quality control methods and standards of Chinese medicines.

NICPBP is directly affiliated to the Ministry of Public Health and is the legally authorized agency for the nationwide quality control of pharmaceuticals and biological products. It is responsible for checking or adjudicating technical problems in quality control of pharmaceuticals and biological products, and participates in the preparation and revision of the Chinese Pharmacopoeia.

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