The unreliability of Chinese traditional medicines

March 23 2016

Chinese medicines are manufactured and distributed all over the world. Many people perceive them as natural, even benign and with few side effects, but regulation of human medicines fluctuates widely in different countries. Are they really as safe as we think? Previous studies have found conflicting evidence of the presence of hazardous chemicals such as Arsenic (As) and Mercury (Hg) in Chinese medicines. Now a new research paper recently published by Dr Etsuko Furuta (Ochanomizu University, Japan) and Professor Nobuaki Sato, (Tohoku University, Sendai, Japan) in Toxicological & Environmental Chemistry, raises questions about what controls should be implemented regarding the use, importation and production of Chinese medicines.

Furuta and Sato have published analyses of the chemical make-up of 32 Chinese medicines, 21 samples were purchased online and the rest from Japanese markets and pharmaceutical companies. The authors employed two non-dissolving methodologies to test the medicines; Instrumental Neutron Activation Analysis (INAA) to examine the concentrations of any hazardous elements present, and X-ray diffraction (XRD) to determine chemical structures of high concentration elements present. The results from these tests showed the presence of As and Hg in all samples. Additionally the results showed that medicines with identical names, but different places of production, had considerably inconsistent concentrations of these hazardous elements. These tests also revealed that the use of INAA and XRD together yielded the most accurate results for quantitative and structural analysis; XRD alone failed to detect low levels of As and Hg in some samples but without it the

chemical structure of elements present could not be determined, this a key indicating factor for user safety, putting results of previous, less thorough, examinations in doubt.

Most of the Chinese medicines purchased had no ingredient sheet, which would make product evaluation difficult for the customer. However, those which did have an ingredient sheet were not always right; tests revealed the presence of unlisted hazardous ores and again widely varying concentrations of others or different ingredients in identically named medicines. Furuta and Sato point out that raised levels of Hg are likely due to environmental contaminants, yet another indicator for the need for stricter regulation of Chinese medicines and their use.

This study reveals a very unclear picture of safety in Chinese medicines. Despite their historically unregulated use, the authors urge for tighter controls on importation, better information on their chemical structures, and thorough consultation with a Doctor before regular use. Their conclusion is clear: "a long-term continuous consumption of these herbs should be avoided."

More information: Etsuko Furuta et al. Quantitative and structural analyses of hazardous elements in Chinese medicines and herbs, *Toxicological & Environmental Chemistry* (2016). DOI: 10.1080/02772248.2015.1135927

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