



Estimation of cancer risk due to exposure to cadmium contamination in herbal products in Thailand

Viroj Wiwanitkit*

Surin Rajabhat University, Surin, Thailand

ARTICLE INFO

Article Type:

Epidemiology and Prevention

Article History:

Received: 10 December 2014

Accepted: 28 December 2014

ePublished: 14 January 2015

Keywords:

Cancer risk

Cadmium

Herbal drugs

Implication for health policy/practice/research/medical education:

Contamination in herbal products becomes the big problem at present. Many dangerous chemical can be seen in many herbal products. Cadmium is a heavy metal that can be a possible contaminant.

Please cite this paper as: Wiwanitkit V. Estimation of cancer risk due to exposure to cadmium contamination in herbal products in Thailand. J Nephroarmacol. 2015;4(2):81-82.

At present, the use of alternative and complimentary medical product becomes an important concern in modern medicine. A lot of patients find and seek such products for using in disease management. Contamination in herbal products becomes the big problem at present. Many dangerous chemical can be seen in many herbal products. Cadmium is a heavy metal that can be a possible contaminant. According to a recent study by Ramezani et al, high level of cadmium can be seen in herbal plants (1). Intoxication due to intake of contaminated product is of concern. Exposure to cadmium can result in nephropathy and the chronic exposure is related to renal carcinogenesis (2,3). Focusing on kidney cancer, Liu et al noted that the cadmium-induced oxidative stress was related to the aberration of gene which further resulted in renal toxicity, renal pathology and carcinogenesis (4). Here, the authors assess cancer risk from oral intake of cadmium contaminated Thai herbal products using the standard technique previously published by Wiwanitkit (5). Individual lifetime cancer risk is calculated using the following equation, by “concentration of contaminated lead in herbal product × lifetime unit risk factor.” The referencing unit risk factor of cadmium is equal to $1.8 \times 10^{-3} \text{ m}^3/\mu\text{g}$ (<http://rais.ornl.gov/tox/profiles/cadmium.html>). Focusing on the cadmium contamination, according to the recent study on 86 product samples collected from Bangkok Metropolitan region, the prevalence rate of cadmium contamination is equal to 24.4% (6). According to that

study, the average concentration of cadmium is equal to 23.9 ppm or $23.9 \times 10^3 \mu\text{g}/\text{kg}$ (referencing cadmium density equal to 8650 kg/m³); (<http://www.webelements.com/cadmium/>). According to these basic information, the derived individual lifetime cancer risk is equal to 372 132. Adjusted with the prevalence of contamination, the estimated cancer risk of a person due to oral intake of herbal product is equal to 90 800.2. This rate is extremely high and it seems that the use of local herbal product by local people significantly increases the chance to have a renal cancer in their lifetime.

Author’s contribution

VW is the single author of the paper.

Conflicts of interest

The author declared no competing interests.

Ethical considerations

Ethical issues (including plagiarism, data fabrication, double publication) have been completely observed by the author.

Funding/Support

None.

References

1. Ramezani Z, Aghel N, Amirabedin N. Determination of Pb and Cd in Garlic Herb (*Allium sativum*)

*Corresponding author: Viroj Wiwanitkit, Email: wviroj@yahoo.com

- Planted in Gilan and Khuzestan Provinces Using Graphite Furnace Atomic Absorption Spectrometry. *Jundishapur J Nat Pharm Prod.* 2012;7:41-4.
2. Grisler R, Gobbi A. Cadmium-induced nephropathy. *Med Lav.* 1978;69:576-93.
 3. Waalkes MP. Cadmium carcinogenesis. *Mutat Res.* 2003;533:107-20.
 4. Liu J, Qu W, Kadiiska MB. Role of oxidative stress in cadmium toxicity and carcinogenesis. *Toxicol Appl Pharmacol.* 2009;238:209-14.
 5. Wiwanitkit V. Contamination of arsenic species in rice and the calculation for risk of cancer. *J Can Res Ther* [cited 2015 Sep 7]. Available from: <http://www.cancerjournal.net/preprintarticle.asp?id=140987>
 6. Phupaibul P, Soiklom S, Paison P. Contamination of heavy metal in Thai traditional medicine. Proceedings of 48th Kasetsart University Annual Conference: Plants; 2010; Bangkok; Kasetsart University. 1-9.

Copyright © 2015 The Author(s); Published by Society of Diabetic Nephropathy Prevention. This is an open-access article distributed under the terms of the Creative Commons Attribution License (<http://creativecommons.org/licenses/by/4.0>), which permits unrestricted use, distribution, and reproduction in any medium, provided the original work is properly cited.