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Data Article

The concentration data of heavy metals in Iranian grown and imported rice and human health hazard assessment

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ABSTRACT

The aim of this study was to review the prevalence of rice contamination to heavy metals in Iranian grown and imported rice brands by conducting a systematic review and assess the related human health risk. Multiple keywords such as "rice, heavy metals, and Iran" were used to search in related databases. The average concentration of Cd, Pb, As, Cu, Zn, Cr, Ni and Co for Iranian grown/imported rice were calculated as $0.16 \pm 0.08/0.13 \pm 0.05$, $0.196 \pm 0.16/0.55 \pm 0.56$, $0.046 \pm 0.002/0.057 \pm 0.0035$, $0.29 \pm 0.05/0.61 \pm 0.31$, $26.13 \pm 10.3/3.46 \pm 2.49$, $0.22 \pm 0.04/0.76 \pm 0.101$, $16 \pm 7.3/2.08 \pm 0.34$ and $0.29 \pm 0.047/0.29 \pm 0.07$ mg kg⁻¹, respectively. Except Co, there were significant differences between Iranian and imported rice brands. Estimated weekly intake for none of the metals exceeds the provisional tolerable weekly intake value. Accordingly, the rice types consumed in Iran have no health hazard for consumers.

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Specifications Table

Subject area	Chemistry, Biology
More specific subject area	Describe narrower subject area
Type of data	Table, figure
How data was acquired	Data of this study have been extracted from previous studies in this field
Data format	Raw, analyzed,
Experimental factors	The average of Cd, Pb, As, Cu, Zn, Cr, Ni, and Co for Iranian grown/imported were calculated (based on previous studies). After determining the heavy metal concentration, human risk assessment and exposure to heavy metals through rice consumption was performed.
Experimental features	Determining of heavy metals in Iranian and imported rice
Data source location	City, Country and/or Latitude & Longitude (& GPS coordinates) for collected samples/data if applicable
Data accessibility	Data are included in this article and supplemented excel file

Value of the data

- Rice as a food ingredients is widely used around the world especially in Iran. According to FAO reports, about 30% of total energy and 20% of the protein source of world population are provided through rice consumption.
- Recently, food contamination by heavy metals has been considered increasingly as a serious threat due to potential accumulation of in human body, plants, crops and animals finally enter to food chains
- In Iran, anciently, rice has been cultivated in some locations especially in north of the country, but due to high demand it is imported from other countries such as Thailand, India and Pakistan.
- Heavy metals such as lead, cadmium and arsenic are xenobiotic, in the sense that these elements are not required for the body metabolism even in trace amounts are potentially toxic for human
- Plants such as rice could accumulate heavy metals in the crop and transfer the metals to human body

1. Data

1.1. Experimental design, materials and methods

1.1.1. Search strategy

This systematic review was carried out based on published original articles in all publications (Internal and external databases, 2000–2017). In this review, internal (Persian Journals) and international databases such as Scientific Information Database (www.sid.ir), Magiran (www.Magiran.com), Iranian Research Institute for Information Science and Technology (www.irandoc.ac.ir), Iran Medex (www.iranmedex.com), and other famous English databases including Google scholar, Pubmed and Web of science were searched for key words of: “heavy metals”, “rice”, “Iran” (and Persian equivalents) in fields, title, abstract and keywords. Fig. 1 shows the search strategy diagram. After the first stage, the found articles were checked for eligibility for this review. Finally, the essential data was obtained through the selected articles and insert to spread sheet for further analysis.

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