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Randa A. Althobiti, Nausheen Sadiq, Diane Beauchemin

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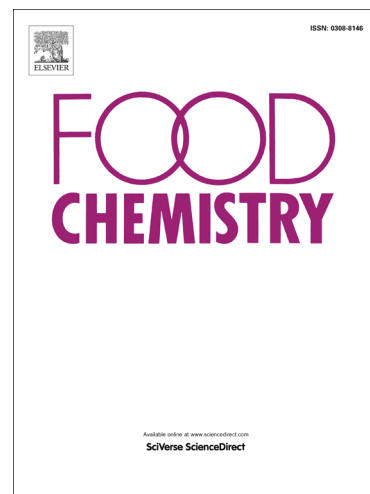
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Realistic risk assessment of arsenic in rice

Randa A. ALTHOBITI, Nausheen SADIQ[†] and Diane BEAUCHEMIN^{‡*}

Queen's University, Department of Chemistry, 90 Bader Lane, Kingston, ON K7L 3N6, Canada

ABSTRACT

Over 3 billion people share a diet consisting mainly of rice, which may contain significant amounts of arsenic. Because the toxicity of arsenic is dependent on its chemical form and that it may be in a form that is not bio-accessible (i.e. dissolved in the gastrointestinal tract) and can thus not become bio-available (i.e. end up in the blood stream, where it may exert its toxic effect), the bio-accessibility of arsenic was determined in thirteen different types of rice. The effects of washing and cooking were also studied. The total concentration of arsenic ranged from 93 to 989 $\mu\text{g kg}^{-1}$ and its bio-accessibility ranged from 16 to 93%. Cooking only changed arsenic speciation in a few cases. However, simply washing rice with arsenic-free water before cooking removed 3-43% of the arsenic, resulting in all the rice tested except the most contaminated one being safe to consume by adults.

Key words: bio-accessibility, rice, arsenic, speciation analysis, inductively coupled plasma mass spectrometry

[†]Current address: McGill University, Department of Food Science and Agricultural Chemistry, 21111 Lakeshore, Ste Anne de Bellevue, QC H9X 3V9.

[‡]E-mail: diane.beauchemin@chem.queensu.ca; telephone: 1-613-533-2619; fax: 1-613-533-6669.

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