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## Determination of inorganic arsenic in rice flour by inductively coupled plasma-mass spectrometry (ICP-MS)

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Arsenic constitutes one of the most toxic trace elements found in the environment both as organic and inorganic forms. The total inorganic As (inAs) is the sum of As(III) and As(V), which are considered carcinogenic. Besides being carcinogen, it also causes a wide range of adverse health effects such as skin lesions, abnormal glucose metabolism, cardiovascular diseases etc. However, the susceptibility to the toxic effects differs considerably between individuals and populations depending on factors such as age, gender and nutritional habits. The main source of human exposure to inAs is via the food chain. Among agricultural products, rice as a bio-accumulative plant and staple food for half the world's population, contributes significantly to inAs human intake. Despite its high toxicity, regulatory limits of inAs in foodstuffs have been established recently by regulation EU 2015/1006. Specifically, maximum levels of inAs for non-parboiled milled rice and parboiled, husked rice must be 0.20 and 0.25 mg/kg, respectively. Significantly lower limits have also been set for commodities such as rice-based products and food destined for the vulnerable portion of consumers, like infants and young children (0.30 and 0.10mg/kg, respectively). Consequently, the selective determination of inAs is nowadays considered a challenge for food analysts. The present work describes the development of a method for determination of inAs in rice flour by inductively coupled plasma-mass spectrometry (ICP-MS). New optimized preparation procedures are applied avoiding microwave assisted digestion step. The conjunction of HPLC by ICP-MS (most common analytical technique internationally applied) makes the analysis simple and rapid. Accuracy and trueness were tested by measuring certified reference materials. It is a well-established in-house developed method under ISO 17025 requirements.

### Biography

Gkalimana Zoi has graduated from the department of Food Science and Human Nutrition of the Agricultural University of Athens. At this time, she is an MSc student of "Program Food Science", at the department of Chemistry of National and Kapodistrian University of Athens. Experiments take place in the Analytical Chemistry department of the "Hellenic Research & Innovation Centre, Institute of Food Safety" for the needs of her practice exercise, gaining experience in ICP-MS analytical technique.

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