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Researchers discover how to cut worrying levels of arsenic

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A large sample of native arsenic. Credit: Aram Dulyan/Public Domain

Researchers at Queen's University Belfast have made a breakthrough in

discovering how to lower worrying levels of arsenic in rice that is eaten all over the world.

After many laboratory experiments, they have discovered that a simple, shop-bought coffee percolator is the best method for removing the carcinogen, inorganic arsenic, from all types of rice, including white and wholegrain. The results are published in the *PLOS ONE* journal today, Wednesday 22 July.

Rice is the only major crop grown under flooded conditions. It is this flooding that releases inorganic arsenic, normally locked up in soil minerals, which is then absorbed by the plant. Too much arsenic is associated with a range of health problems including, at worst, bladder and lung cancer.

Rice has, typically, ten times more inorganic arsenic than other foods and according to the European Food Standards Authority, people who eat a lot of rice, as is the case in many parts of the developing world, are exposed to worrying concentrations. Children and infants are of particular concern as they eat, relatively, three times more rice than adults - baby rice being a popular food for weaning - and their organs are still developing.

In this new study, researchers at Queen's tested two methods of percolating technology, one where the cooking water was recycled through condensing boiling-water steam and passing the freshly distilled hot water through the grain in a lab setting, and one where tap water was used to cook the rice held in an off-the-shelf coffee percolator in a domestic setting.

Both approaches proved highly effective, with up to 85% of arsenic removed from a variety of different rice types and brands, including wholegrain and white.

Andy Meharg, Professor of Plant and Soil Sciences at Queen's Institute for Global Food Security said: "This is a very significant breakthrough as this offers an immediate solution to decreasing inorganic arsenic in the diet.

"In our research we rethought the method of rice cooking to optimise the removal of inorganic arsenic and we discovered that by using percolating technology, where cooking water is continually passed through rice in a constant flow, we could maximise removal of arsenic.

"Chronic exposure to inorganic arsenic can cause a range of health problems including developmental problems, heart disease, diabetes and nervous system damage. However, most worrying are lung and bladder cancers. This new breakthrough is the latest example of the commitment of researchers at Queen's to changing lives and advancing knowledge that will have a lasting impact around the globe."

Queen's is at the patent stage for the development of a bespoke rice cooker based on a percolation system which means consumers could soon have this technology in their own kitchen.

More information: *PLOS ONE*, DOI: 10.1371/journal.pone.0131608

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