

Decreasing arsenic accumulation in rice to reduce health risk.

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Rice accumulates arsenic from paddy soil efficiently, which poses a potential health risk to humans and livestock. One class of water channels (aquaporins) mediates uptake of arsenite, the predominant form of arsenic in paddy soil, into rice roots. We hypothesise that the accumulation of arsenic into rice grain and straw is mediated by specific aquaporins that are also involved in panicle ripening and leaf drought responses. This project will identify and characterise the transporters responsible for grain and leaf arsenite uptake using a range of molecular and analytical techniques. Transport functions and substrate-specificity will be determined using *Xenopus* oocytes. Expression and localisation of candidate genes in leaves and developing grain will be characterised. Arsenic speciation and distribution in rice wild-type knockout lines will be quantified using HPLC-ICP-MS and X-ray absorption spectrometry. The information obtained will provide targets for decreasing arsenic accumulation in this important crop.



Rice in pot culture (left)

Rice in sterile culture on agar (below)



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