

Of mice and men... and kidney stones

Kidney stones are very common – and painful – in men. About 3 in 20 men (1 in 20 women) in developed countries develop them at some stage. Mice, however, rarely suffer though the precise reasons are unknown. Jeffrey S. Clark and colleagues, writing in *The Journal of Physiology*, have come up with some answers.

Kidney stones are crystalline deposits of various chemicals that should normally be excreted in the urine, particularly oxalate. Common in food, it is usually disposed of by the gut into the faeces by exchanging it for chloride. If there is little chloride available, in a low-salt diet for example, oxalate may be retained by the intestine to eventually be excreted by the kidneys, where the stones may form.

Mice, unlike men, do not spontaneously develop kidney stones, making it difficult to set up an animal model of this common disease. Now, some reasons for this difference between mice and men may have emerged.

The researchers showed that the human form of the protein responsible for secreting oxalate into the faeces requires a lot more chloride for efficient oxalate transport than the same structure in mice. Worse still, a variant form of the protein found in some people has even further reduced ability to export oxalate. Mice, it seems, are far more efficient at disposing of oxalate than we are.

Uncovering the molecular mechanisms of oxalate removal should help to develop improved treatments to prevent or even reverse the formation of kidney stones in humans, and paves the way for a mouse model of the disease to aid kidney stone research.

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