

# **Biblical myoglobinuria**

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We read with interest the recent paper by Mazokopakis and Karagiannis<sup>1</sup> considering toxicological candidates for the poisoning of the prophets' sons recounted in 2 *Kings* 4: 38 – 41. Here we propose an underlying mechanism that we argue may be relevant to several celebrated biblical maladies.

It remains an open question how the putative wild cucumber toxins (both 'drastic purgatives') might have exerted their potentially lethal effects. Fatal diarrhoea is fortunately rare but does occur in the context of profound hypokalaemia provoking myoglobinuria (rhabdomyolysis) and metabolic collapse<sup>2</sup>. The causes of myoglobinuria are legion but include a number of toxins, acting via various mechanisms that converge on the breakdown of sarcolemma integrity and/or failure of myocyte energy supply<sup>3</sup>. The acute renal failure that attends major myoglobinuria is compounded by hypovolaemia, a further hazard of fulminant diarrhoea. Before the advent of renal dialysis (as recently as the mid Twentieth Century), this scenario would have proved frequently fatal, so might indeed have brought 'death in the pot' along with its wild gourds.

Myoglobinuria is also implicated in certain other biblical catastrophes, most notoriously the 'very great scourge' [מִכָּה רַבָּה מְאֹד] of quails [שְׂלִיִּים] that struck the Hebrews during their flight from Egypt (*Numbers* 11: 31- 34). It is likely that the quails in question had fed on hemlock seeds (which contain coniine, a potent neuro-myotoxin) and myoglobinuria then became inevitable 'ere [their contaminated flesh] was chewed' by the Hebrews in exile. There is also the suggestion that the last and most terrible of the plagues visited on Pharaoh (the death of Egypt's firstborn sons) may have been a mycotoxin, promoted by the dank conditions, malnutrition and widespread immunosuppression created by the first nine plagues<sup>4</sup>. There are several possible candidate organisms, including *Aspergillus*: a well-recognised cause of severe myoglobinuria<sup>5</sup>.

## References

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