

## **Extremely slow formate elimination in severe methanol poisoning: a fatal case report.**

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Methanol poisoning is a potentially fatal medical emergency because of its metabolism to formic acid. The half-life of formate has been reported in the range of 2.5-12.5 hours, but the degree of inter-individual variation is not known. We studied methanol and formate kinetics in a case of late diagnosed methanol poisoning with persisting metabolic acidosis and circulatory failure. **CASE REPORT:** A 63-year-old man was referred to our hospital with a tentative diagnosis of stroke. He was awake on admission, but he soon deteriorated in the emergency department and a metabolic acidosis was revealed. Methanol poisoning was then suspected approximately five hours after admission but in spite of intensive treatment he died after six days. **RESULTS:** The S-methanol half-lives during treatment with fomepizole before and during hemodialysis were 49.5 and 4.1 hours, respectively, while the similar half-lives of S-formate were 77.0 and 2.9 hours. S-fomepizole was measured and found to be within the therapeutic range during treatment. **DISCUSSION:** The patient was treated with the established dosing regimen for fomepizole and the measured S-fomepizole levels throughout the treatment were adequate; the S-methanol elimination also suggests that methanol metabolism was blocked. Hence, other explanations for this exceptionally long formate half-life include slow formate metabolism, due to small hepatic folate stores or to genetic deficiencies in formate-metabolizing enzymes, or slow formate excretion, due to renal tubular acidosis, to a non-oliguric renal failure, or to genetic deficiencies in the renal formate transporters. **CONCLUSION:** This case report indicates that the half-life of S-formate may have greater inter-individual variation than earlier expected, being by far the longest half-life reported in the medical literature. These results support the use of hemodialysis in the treatment of such patients.

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