**Is one-dose-for-all suitable for low dose colchicine in patients with gout?**

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Aims. Colchicine is commonly prescribed at a fixed dose of 0.5mg daily for the management of gout and has recently been approved for the secondary prevention of cardiovascular disease. The aim of this study was to determine the probability of achieving steady-state plasma concentrations within the safe and effective range using low dose therapy.

Methods. Colchicine plasma concentrations from 78 people with gout and 13 healthy volunteers were analyzed using non-linear mixed effects modelling [1]. Body size, kidney function, concomitant drugs, ethnicity, sex, and age were tested as covariates in the model. Stochastic simulations were conducted to determine the probability of achieving colchicine Cav,ss values within the proposed therapeutic range of 0.5-3 ng/mL at doses of 0.5-1mg daily and for different patient characteristics. Reduced kidney function was simulated using a fractional effect on colchicine CL/F [2]. Doses that produced Cav,ss concentrations >0.5 or < 3ng/mL more than 80% of the time were assumed to be efficacious and safe. Observed gout flare rates at 3 months were compared to the probability of subtherapeutic concentrations.

Results. Body weight, sex, and statin use predicted colchicine pharmacokinetics. Colchicine 0.5mg daily achieved Cav,ss > 0.5 ng/mL 65% of the time. When stratified by body weight quartiles, Cav,ss values were > 0.5 ng/mL in 87% (Q1), 72% (Q2), 61% (Q3) and 42%(Q4) of simulates while mean gout flares increased numerically for the same quartiles from 0.7- 2.20 flares after 3 months of therapy. An increased dose of 0.5mg twice daily resulted in Cav,ss concentrations between 0.5-3ng/mL in >80% of simulates with body weight above 95kg, regardless of kidney function and statin use.

Discussion. Our simulation study suggests that colchicine 0.5mg daily will not consistently achieve therapeutic concentrations in gout patients > 95kg. Increasing the dose to 0.5mg twice daily is expected to achieve therapeutic concentrations in patients >95kg without exceeding the proposed upper limit of the therapeutic range. Further work to validate the colchicine therapeutic range and to explore individualised dosing needs for some patients is needed.

References

1. Wright et al (2025) Clin Pharmacokinet doi.org/10.1007/s40262-025-01551-y
2. Wason et al (2014) Clin Drug Investig 2014;34:845-55.