



if a 12 week course of a drug reduced the toxin by 60% in 12 weeks, how many weeks would it take to reduce the toxin to near zero

To reduce a toxin by 60% in 12 weeks suggests an exponential decay process, typical for drugs and toxins in the body. If the drug continues to decrease the toxin by 60% every 12 weeks, then after each 12-week period, only 40% of the previous amount remains. This geometric progression leads to a “near zero” toxin level (usually considered less than 1% of the original) over time.

Calculation Approach

Exponential decay can be calculated using the formula:

$$A_t = A_0 \times (0.4)^{t/12}$$

where A_0 is the starting amount, A_t is the amount after t weeks, and each 12 weeks leaves 40% remaining.^[1]

To find when $A_t/A_0 < 0.01$ (i.e., less than 1%), solve for t :

$$0.01 = 0.4^{t/12}$$

$$\log(0.01) = \frac{t}{12} \log(0.4)$$

$$\frac{\log(0.01)}{\log(0.4)} \times 12 = t$$

Plug in the values:

- $\log(0.01) = -2$
- $\log(0.4) \approx -0.398$

$$t = \frac{-2}{-0.398} \times 12 \approx 60.3 \text{ weeks}$$

Summary Table

Percent Remaining	Weeks Needed
40%	12
16%	24

Percent Remaining	Weeks Needed
6.4%	36
2.56%	48
1.02%	60

Conclusion

It would take about 60 weeks for the toxin to reach near zero (less than 1% of the original) with a drug that reduces it by 60% every 12 weeks, assuming the same rate of exponential decay continues. ^[2] ^[1]



1. <https://tooldone.com/health/drug-half-life-calculator/>
2. <https://www.omnicalculator.com/health/drug-half-life>
3. <https://www.ncbi.nlm.nih.gov/books/NBK554498/>
4. <https://pmc.ncbi.nlm.nih.gov/articles/PMC7310262/>
5. <https://www.sciencedirect.com/topics/medicine-and-dentistry/plasma-concentration-time-curve>
6. <https://academic.oup.com/cid/article/79/6/1503/7740506>
7. <https://www.cms.gov/medicare-coverage-database/view/lcd.aspx?lcdid=39859>
8. <https://journals.sagepub.com/doi/pdf/10.1177/019262339502300203>
9. <https://tjn.org.tr/full-text/2094/eng>
10. https://www.ashp.org/-/media/store_files/p2418-sample-chapter-1.pdf
11. <https://integrative-medicine.ca/get-ready-to-detoxify-how-to-reduce-symptoms-of-chronic-toxin-exposure/>
12. <https://www.sciencedirect.com/topics/medicine-and-dentistry/pharmacokinetics>
13. <https://healthycanadians.gc.ca/publications/healthy-living-vie-saine/water-cyanobacteria-cyanobacterie-eau/alt/water-cyanobacteria-cyanobacterie-eau-eng.pdf>
14. <https://www.sciencedirect.com/topics/immunology-and-microbiology/repeated-drug-dose>
15. <https://www.ccsa.ca/sites/default/files/2022-11/CCSA-Canadian-Drug-Summary--Opioids-2022-en.pdf>
16. <https://www.ncbi.nlm.nih.gov/books/NBK591289/>
17. https://pdf.hres.ca/dpd_pm/00078025.PDF
18. <https://www.biorxiv.org/content/10.1101/761585v1.full.pdf>
19. <https://breakingmuscle.com/detoxify-reset-restore-12-weeks-to-return-to-peak-function-and-strength/>
20. <https://www.canada.ca/en/health-canada/services/drugs-health-products/drug-products/applications-submissions/guidance-documents/hepatotoxicity-pre-market-evaluation.html>