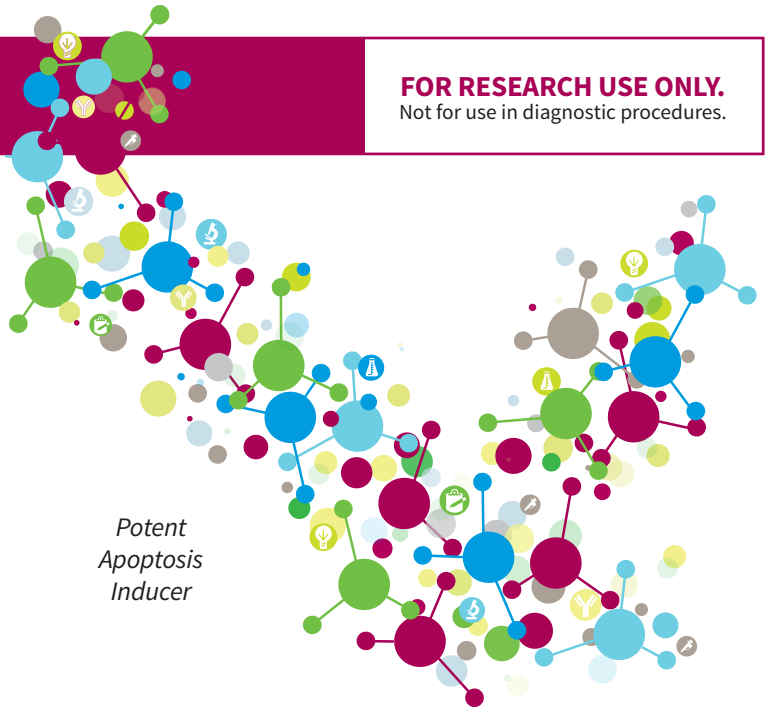
Camptothecin

Catalog #6208, #6209, #6210

FOR RESEARCH USE ONLY.
Not for use in diagnostic procedures.



INTRODUCTION

Camptothecin is a potent cytotoxic pentacyclic alkaloid known for its potent apoptosis inducing properties[1]. Originally isolated from Camptotheca acuminata (Nyssaceae), a tree native to China, these alkaloid extracts were used extensively in traditional Chinese medicine[2]. Camptothecin and its analogs have been demonstrated to inhibit topoisomerase I (topo I), causing cells in S phase to enter into apoptosis. Camptothecin binds to and stabilizes the topo I – DNA backbone complex (covalent binary complex). This stabilized complex diminishes the rate of topo I release from the broken strand, thus slowing the religation and subsequent DNA synthesis process[1,3,4].

SPECIFICATIONS

- Formula: $C_{20}H_{16}N_2O_4$
- Formula Weight: 348.35
- CAS#: 7689-03-4
- Purity: ≥ 98%

STORAGE

- Store at -20°C
- Avoid freeze/thaw cycles

SOLUBILITY

- DMSO (10 mg/mL)
- Methanol (40 mg/mL)
- 0.1 N NaOH
- Insoluble in water

SIZES

- #6208, 25 mg
- #6209, 100 mg
- #6210, 250 mg

SAFETY

- **DANGER!** Toxic if swallowed.
- See Safety Data Sheet (SDS)
- SDS available at www.immunochemistry.com and by calling ICT at 952-888-8788 and 800-829-3194.
- For research use only.
- Not for use in diagnostic procedures.

HOW TO USE

1. Dissolve camptothecin powder in tissue culture grade DMSO to obtain a 2 mg/mL camptothecin stock concentration.
2. Prepare 50-100 uL aliquots of the DMSO solublilized camptothecin and store frozen at -20°C. A frozen vial of camptothecin may be thawed twice before discarding.
3. Spike cell cultures at a camptothecin concentration range of 2-4 µg/mL, which yields a cell culture camptothecin concentration of 6-12 µM (see example calculations). This camptothecin concentration range works well for inducing cell suspensions, which usually run in the 1 x 10^5-1 x 10^6 cells/mL concentration range. At this concentration range, successful apoptosis induction has been achieved in Jurkat and HL-60 cell cultures after a 4 hour incubation period at 37°C .

   Example Calculations :
   Camptothecin Formula Weight = 348.35; 2 µg/mL = 2 mg/L
   2 mg/L / 348.35 mg/mmole = 0.057 mM = 6 µM

   Camptothecin Formula Weight = 348.35; 4 µg/mL = 4 mg/L
   4 mg/L / 348.35 mg/mmole = 0.0115 mM = 12 µM
4. Perform time course studies on your particular cell line to determine the optimal camptothecin concentration and exposure time required to achieve good apoptosis induction levels.
5. Proceed with your experimental apoptosis induction model system.

REFERENCES

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2. Wall, M. E. et al. Plant Antitumor Agents. I. The Isolation and Structure of Camptothecin, a Novel Alkaloidal Leukemia and Tumor Inhibitor from Camptotheca acuminata1,2. Journal of the American Chemical Society 88, 3888-3890, doi:10.1021/ja00968a057 (1966).
3. Hsiang, Y. H., Hertzberg, R., Hecht, S. & Liu, L. F. Camptothecin induces protein-linked DNA breaks via mammalian DNA topoisomerase I. J Biol Chem 260, 14873-14878 (1985).
4. Hertzberg, R. P., Caranfa, M. J. & Hecht, S. M. On the mechanism of topoisomerase I inhibition by camptothecin: evidence for binding to an enzyme-DNA complex. Biochemistry 28, 4629-4638, doi:10.1021/bi00437a018 (1989).

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