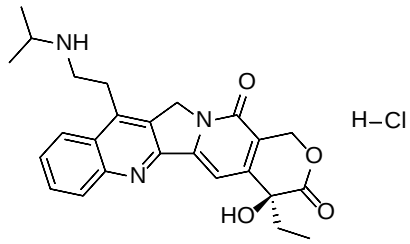
Product data sheet

MedKoo Cat#: 526096 Name: Belotecan Hydrochloride CAS#: 213819-48-8 Chemical Formula: $C_{25}H_{28}ClN_3O_4$ Exact Mass: 469.1768 Molecular Weight: 469.97	
Product supplied as:	Powder
Purity (by HPLC):	≥ 98%
Shipping conditions	Ambient temperature
Storage conditions:	Powder: -20°C 3 years; 4°C 2 years.
	In solvent: -80°C 3 months; -20°C 2 weeks.

1. Product description:
Belotecan, also known as CKD-602, is the semi-synthetic camptothecin analogue belotecan with potential antitumor activity. Belotecan binds to and inhibits the activity of topoisomerase I, stabilizing the cleavable complex of topoisomerase I-DNA, which inhibits the religation of single-stranded DNA breaks generated by topoisomerase I; lethal double-stranded DNA breaks occur when the top technicaloisomerase I-DNA complex is encountered by the DNA replication machinery, DNA replication is disrupted, and the tumor cell undergoes apoptosis. Topoisomerase I is an enzyme that mediates reversible single-strand breaks in DNA during DNA replication.

2. CoA, QC data, SDS, and handling instruction
SDS and handling instruction, CoA with copies of QC data (NMR, HPLC and MS analytical spectra) can be downloaded from the product web page under "QC And Documents" section. Note: copies of analytical spectra may not be available if the product is being supplied by MedKoo partners. Whether the product was made by MedKoo or provided by its partners, the quality is 100% guaranteed.

3. Solubility data

Solvent	Max Conc. mg/mL	Max Conc. mM
DMSO	48.50	103.20
Water	4.0	8.51

4. Stock solution preparation table:

Concentration / Solvent Volume / Mass	1 mg	5 mg	10 mg
1 mM	2.13 mL	10.64 mL	21.28 mL
5 mM	0.43 mL	2.13 mL	4.26 mL
10 mM	0.21 mL	1.06 mL	2.13 mL
50 mM	0.04 mL	0.21 mL	0.43 mL

5. Molarity Calculator, Reconstitution Calculator, Dilution Calculator
Please refer the product web page under section of "Calculator"

6. Recommended literature which reported protocols for in vitro and in vivo study
In vitro study

1. Lee S, Ho JY, Liu JJ, Lee H, Park JY, Baik M, Ko M, Lee SU, Choi YJ, Hur SY. CKD-602, a topoisomerase I inhibitor, induces apoptosis and cell-cycle arrest and inhibits invasion in cervical cancer. Mol Med. 2019 May 28;25(1):23. doi: 10.1186/s10020-019-0089-y. PMID: 31138113; PMCID: PMC6540464.

In vivo study

1. Lee S, Ho JY, Liu JJ, Lee H, Park JY, Baik M, Ko M, Lee SU, Choi YJ, Hur SY. CKD-602, a topoisomerase I inhibitor, induces apoptosis and cell-cycle arrest and inhibits invasion in cervical cancer. Mol Med. 2019 May 28;25(1):23. doi: 10.1186/s10020-019-0089-y. PMID: 31138113; PMCID: PMC6540464.

7. Bioactivity
Biological target: Belotecan hydrochloride is a Topoisomerase I inhibitor.

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In vitro activity

Treatment with CKD-602 showed a significant cytotoxic effect in all cervical cancer cell lines in a time- ($p < 0.05$) and dose- ($p < 0.05$) dependent manner (Additional file 1: Figure S1). The IC50 (50% inhibition concentration of cell viability) values were 30 ng/ml (95% CI: 18.29–63.30) for Caski cells, 150 ng/ml (95% CI: 100.3–179.4) for HeLa cells, and 150 ng/ml (95% CI: 64.63–254.3) for SiHa cells at 48 h after treatment. To investigate the efficacy of CKD-602 in cervical cancer, pro-apoptotic activity was measured. A strong pro-apoptotic activity was observed in the treatment groups after 48 h of treatment (Fig. 1a and b). Compared to the control, apoptosis rates significantly increased in Caski, HeLa and Siha when treated with different concentrations (half the IC50 and IC50 values). The treatment increased the expression of PARP, cleaved PARP and Bcl2-associated X protein (BAX). In addition, expression of both p53 and phosphorylated p53 (Ser15) was increased (Fig. 1c).

Reference: Mol Med. 2019 May 28;25(1):23. https://www.ncbi.nlm.nih.gov/pmc/articles/PMC6540464/

In vivo activity

It was investigated whether CKD-602 would be effective in an in vivo model. Groups of BALB/c-nude mice (five per group) were subcutaneously injected with CaSki cells and then treated (intravenously) with CKD-602 (25 m/kg) or PBS two weeks after the transplantation, when the tumors were approximately 80 mm3 (Fig. 4a). Seventeen days after the last injections, the mice were killed and the tumor volume measured and body weights of the mice recorded (Fig. 4b). Treatment with CKD-602 significantly inhibited the tumor growth of in this xenograft model compared with the control ($p < 0.05$). There was no significant difference in body weight between the xenograft mice and the controls, indicating that treatment with CKD-602 was well tolerated (Fig. 4b).

Reference: Mol Med. 2019 May 28;25(1):23. https://www.ncbi.nlm.nih.gov/pmc/articles/PMC6540464/