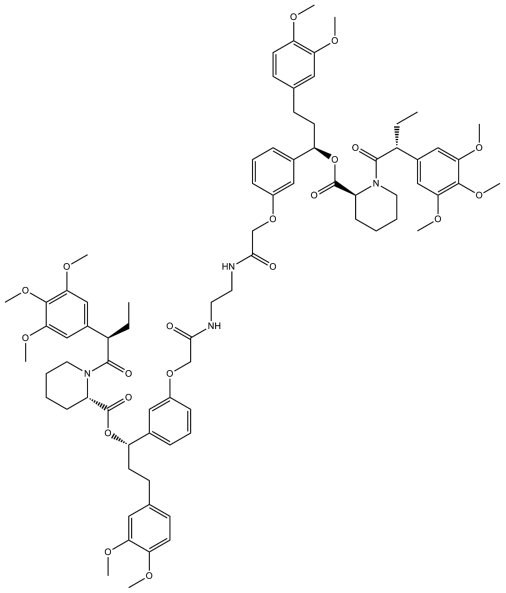
# Product Data Sheet

Product Name: AP1903
Cat. No.: GC15586

## Chemical Properties

| | | | |
|---|---|---|---|
| Cas. No. | 195514-63-7 | | |
| SMILES | O=C([C@@H](C(C=C1OC)=CC(OC)=C1OC)CC)N2[C@H](C(O[C@@H](C3=CC=CC(OCC(NCCNC(COC4=CC([C@H](CCC(C=C5OC)=CC=C5OC)OC([C@H]6N(C([C@@H](C(C=C7OC)=CC(OC)=C7OC)CC)=O)CCCC6)=O)=CC=C4)=O)=O)=C3)CCC(C=C8)=CC(OC)=C8OC)=O)CCCC2 | | |
| Formula | C78H98N4O20 | M.Wt | 1411.63 |
| Solubility | ≥ 23.5mg/mL in DMSO | Storage | Store at -20°C,unstable in solution, ready to use. |
| General tips | For obtaining a higher solubility , please warm the tube at 37 °C and shake it in the ultrasonic bath for a while.Stock solution can be stored below -20°C for several months. | | |
| Shipping Condition | Evaluation sample solution : ship with blue ice All other available size: ship with RT , or blue ice upon request. | | |

Structure



## Protocol

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**Cell experiment [1]:**

| | |
|---|---|
| Cell lines | SH-SY5Y cells |
| Preparation Method | SH-SY5Y cells ($3\times10^5$) were plated in 6-well plates and transfected using a complex of polyethylenimine (PEI; 1mg/ml) and pIRES2-iC9 (4μg/well). Forty-eight hours after transfection, cells were treated with different concentrations of AP1903 (0, 5, 10, and 50nM). Cells were stained on day 5 after treatment, and then the morphological changes were assessed. |
| Reaction Conditions | 0, 5, 10, and 50nM; 5 days |
| Applications | AP1903 treatment significantly induced morphological changes of SH-SY5Y cells, with star-shaped characteristics. |

**Animal experiment [2]:**

| | |
|---|---|
| Animal models | Immunodeficient NSG mice |
| Preparation Method | Immunodeficient NSG mice aged 4-8 weeks were maintained under standard conditions. $3\times10^6$ EF1α-iCasp9-hΔCD19 miPSCs were suspended in IMDM medium, mixed with Matrigel in a 1:1 ratio, and injected subcutaneously in a volume of 200μl into the mice. AP1903 (5mg/kg/day) was administered intravenously to the mice in a once-daily manner for 5 consecutive days, starting on the day of miPSC implantation. Tissue samples were taken from mice at the end of the experiment for analysis. |
| Dosage form | 5mg/kg/day for 5 days; i.v. |
| Applications | AP1903 treatment delayed teratoma growth caused by EF1α-iCasp9-hΔCD19 miPSCs in mice. |

***Caution: Product has not been fully validated for medical applications. For research use only.***
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References:
[1] Madadi Z, Akbari-Birgani S, Mohammadi S, et al. The effect of caspase-9 in the differentiation of SH-SY5Y cells[J]. European Journal of Pharmacology, 2021, 904: 174138.
[2] Wu C, Hong S G, Winkler T, et al. Development of an inducible caspase-9 safety switch for pluripotent stem cell–based therapies[J]. Molecular therapy Methods & clinical development, 2014, 1.

## Background

AP1903 is a bivalent "dimerizer" compound that binds FKBP and induces Fas cross-linking [1]. AP1903 rapidly induces dimerization and activation of iC9, inducing apoptosis of the gene modified T cells[2]. AP1903 has been widely used to inhibit tumor growth and increase circulating inflammatory cytokine/chemokine levels[3].

In vitro, AP1903 treatment for 24 hours significantly inhibited the viability of H1 cells transfected with iC9 gene, with an $IC_{50}$ value of 0.1242±0.0083nM[4]. Treatment with 100nM AP1903 for 15 days significantly promoted the expansion of MFM (MSCVF36Vmpl) retroviral vector transduced cord blood cells[5]. Treatment with 50nM AP1903 for 5 days caused morphological changes in SH-SY5Y cells transfected with pIRES2-iC9 vector and induced cell differentiation[6].

In vivo, AP1903 treatment via a single intraperitoneal injection at a dose of 5mg/kg for 9 days ameliorated colitis symptoms and improved survival in acute colitis mice infused with WJ-$MSC^{iCasp9+/Luc+}$ cells[7]. Intravenous injection of AP1903 (5mg/kg/day for 5 days) immediately after intravenous injection of EF1α-iCasp9-hΔCD19 murine induced pluripotent stem cells (miPSCs) resulted in delayed teratoma growth in mice[8].

References:
[1] Thomis D C, Marktel S, Bonini C, et al. A Fas-based suicide switch in human T cells for the treatment of graft-versus-host disease[J]. Blood, The Journal of the American Society of Hematology, 2001, 97(5): 1249-1257
[2] Elkeky R, Jacobsohn D A, Agarwal R, et al. Administration of rimiducid following haploidentical BPX-501 cells in children with malignant or non-malignant disorders who develop graft-versus-host-disease (GvHD)[J]. Blood, 2018, 132: 2207.

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[3] Stein M N, Dumbrava E E, Teply B A, et al. PSCA-targeted BPX-601 CAR T cells with pharmacological activation by rimiducid in metastatic pancreatic and prostate cancer: a phase 1 dose escalation trial[J]. Nature communications, 2024, 15(1): 10743.
[4] Wu Y, Chang T, Long Y, et al. Using gene editing to establish a safeguard system for pluripotent stem-cell-based therapies[J]. Iscience, 2019, 22: 409-422.
[5] Richard R E, Wood B, Zeng H, et al. Expansion of genetically modified primary human hemopoietic cells using chemical inducers of dimerization[J]. Blood, The Journal of the American Society of Hematology, 2000, 95(2): 430-436.
[6] Madadi Z, Akbari-Birgani S, Mohammadi S, et al. The effect of caspase-9 in the differentiation of SH-SY5Y cells[J]. European Journal of Pharmacology, 2021, 904: 174138.
[7] Romecín P A, Vinyoles M, López-Millán B, et al. Robust in vitro and in vivo immunosuppressive and anti-inflammatory properties of inducible caspase-9-mediated apoptotic mesenchymal stromal/stem cell[J]. Stem Cells Translational Medicine, 2022, 11(1): 88-96.
[8] Wu C, Hong S G, Winkler T, et al. Development of an inducible caspase-9 safety switch for pluripotent stem cell–based therapies[J]. Molecular therapy Methods & clinical development, 2014, 1.

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