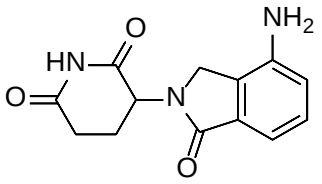
Product data sheet

MedKoo Cat#: 100500 Name: Lenalidomide CAS#: 191732-72-6 Chemical Formula: $C_{13}H_{13}N_3O_3$ Exact Mass: 259.09569 Molecular Weight: 259.26	
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:
Lenalidomide, also known as CC-5013, is the thalidomide analog with potential antineoplastic activity. Lenalidomide inhibits TNF-alpha production, stimulates T cells, reduces serum levels of the cytokines vascular endothelial growth factor (VEGF) and basic fibroblast growth factor (bFGF), and inhibits angiogenesis. This agent also promotes G1 cell cycle arrest and apoptosis of malignant cells. Lenalidomide is an approved drug.

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	51.50	198.64
DMF	16.0	61.71
DMF:PBS(pH 7.2)(1:1)	0.50	1.93

4. Stock solution preparation table:

Concentration / Solvent Volume / Mass	1 mg	5 mg	10 mg
1 mM	3.86 mL	19.29 mL	38.57 mL
5 mM	0.77 mL	3.86 mL	7.71 mL
10 mM	0.39 mL	1.93 mL	3.86 mL
50 mM	0.08 mL	0.39 mL	0.77 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. Moros A, Bustany S, Cahu J, Saborit-Villarroya I, Martínez A, Colomer D, Sola B, Roué G. Antitumoral activity of lenalidomide in in vitro and in vivo models of mantle cell lymphoma involves the destabilization of cyclin D1/p27KIP1 complexes. Clin Cancer Res. 2014 Jan 15;20(2):393-403. doi: 10.1158/1078-0432.CCR-13-1569. Epub 2013 Oct 31. PMID: 24178620.
2. Jian W, Levitt JM, Lerner SP, Sonpavde G. The preclinical activity of lenalidomide in indolent urothelial carcinoma. Anticancer Res. 2014 Jul;34(7):3383-9. PMID: 24982344.

In vivo study

1. Moros A, Bustany S, Cahu J, Saborit-Villarroya I, Martínez A, Colomer D, Sola B, Roué G. Antitumoral activity of lenalidomide in in vitro and in vivo models of mantle cell lymphoma involves the destabilization of cyclin D1/p27KIP1 complexes. Clin Cancer Res. 2014 Jan 15;20(2):393-403. doi: 10.1158/1078-0432.CCR-13-1569. Epub 2013 Oct 31. PMID: 24178620.
2. Jian W, Levitt JM, Lerner SP, Sonpavde G. The preclinical activity of lenalidomide in indolent urothelial carcinoma. Anticancer Res. 2014 Jul;34(7):3383-9. PMID: 24982344.

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7. Bioactivity

Biological target: Lenalidomide (CC-5013) is a TNF-α secretion inhibitor with IC50 of 13nM.

In vitro activity

Natural killer T (NKT) cells are CD1d-restricted glycolipid reactive innate lymphocytes that play an important role in protection from pathogens and tumors. Antitumor properties of NKT cells are linked to their ability to secrete interferon-γ. NKT cells expanded in the presence of lenalidomide (LEN) had greater ability to secrete IFN-γ (Figure 2A). LEN also led to an increase in ligand-dependent induction of interferon-γ production by freshly isolated NKT cells in human peripheral blood mononuclear cells (PBMCs) (Figure 2D). Therefore, LEN leads to an increase in ligand-reactive interferon-γ secretion by human NKT cells in vitro.

Reference: Blood. 2006;108(2):618-621. https://www.ncbi.nlm.nih.gov/pmc/articles/PMC1895497/

In vivo activity

As shown in Fig. 5A, lenalidomide therapy achieved a significant mantle cell lymphoma (MCL) tumor regression (*, $P < 0.05$), when compared with vehicle groups. Tumors isolated from control and drug-treated MCL-bearing mice revealed a 40% reduction in tumor burden in the lenalidomide-receiving group (Fig. 5B). As exemplified in Fig. 5B and C, a remarkable decrease in the mitotic index, together with the activation of caspase-3 and the tightening of blood vessels, was observed in tumors from lenalidomide-receiving mice. Lenalidomide treatment induced a substantial decrease of cyclin D1 and p27KIP1, which was associated with the phosphorylation of the CDK inhibitor at threonine 198 (Fig. 5B and C). Taken together, these data confirm the in vitro observation that lenalidomide is able to impede the growth of MCL tumors with high cyclin D1 and p27KIP1 contents, its antitumor effect being related to the cytosolic redistribution p27KIP1, and subsequent apoptosis induction.

Reference: Clin Cancer Res. 2014 Jan 15;20(2):393-403. https://clincancerres.aacrjournals.org/content/20/2/393.long

Note: The information listed here was extracted from literature. MedKoo has not independently retested and confirmed the accuracy of these methods. Customer should use it just for a reference only.