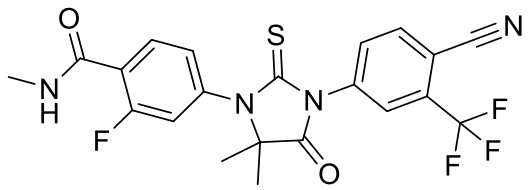
Product data sheet

MedKoo Cat#: 201821 Name: Enzalutamide (MDV3100) CAS#: 915087-33-1 Chemical Formula: $C_{21}H_{16}F_4N_4O_2S$ Exact Mass: 464.09301 Molecular Weight: 464.43	
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:
Enzalutamide, also known as MDV3100, is an orally bioavailable, organic, non-steroidal small molecule targeting the androgen receptor (AR) with potential antineoplastic activity. Through a mechanism that is reported to be different from other approved AR antagonists, selective androgen receptor modulator MDV3100 inhibits the activity of prostate cancer cell ARs, which may result in a reduction in prostate cancer cell proliferation and, correspondingly, a reduction in the serum prostate specific antigen (PSA) level. In August 2012, the United States (U.S.) Food and Drug Administration (FDA) approved enzalutamide for the treatment of castration-resistant prostate cancer.

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	50.0	107.66

4. Stock solution preparation table:

Concentration / Solvent Volume / Mass	1 mg	5 mg	10 mg
1 mM	2.15 mL	10.77 mL	21.53 mL
5 mM	0.43 mL	2.15 mL	4.31 mL
10 mM	0.22 mL	1.08 mL	2.15 mL
50 mM	0.04 mL	0.22 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. Consiglio CR, Udartseva O, Ramsey KD, Bush C, Gollnick SO. Enzalutamide, an Androgen Receptor Antagonist, Enhances Myeloid Cell-Mediated Immune Suppression and Tumor Progression. Cancer Immunol Res. 2020 Sep;8(9):1215-1227. doi: 10.1158/2326-6066.CIR-19-0371. Epub 2020 Jul 13. PMID: 32661092; PMCID: PMC7484281.

In vivo study

1. Semaan L, Mander N, Cher ML, Chinni SR. TMPRSS2-ERG fusions confer efficacy of enzalutamide in an in vivo bone tumor growth model. BMC Cancer. 2019 Oct 21;19(1):972. doi: 10.1186/s12885-019-6185-0. PMID: 31638934; PMCID: PMC6802314.

7. Bioactivity
Biological target:

AR antagonist with an IC50 of 36 nM in LNCaP prostate cells

In vitro activity

Product data sheet

Myeloid cell function is influenced by their metabolic activity. To investigate whether AR blockade altered metabolism in myeloid cells, MDSCs were generated in vitro in the presence of enzalutamide and metabolic changes were assessed using Seahorse technology. Mitochondrial respiration parameters, such as basal respiration, ATP production from oxidative phosphorylation and maximal respiration, were downregulated in MDSCs treated with enzalutamide when compared to DMSO-treated MDSCs (Figures 4A andB). Enzalutamide treatment led to increased glycolytic rate and reduced glycolytic reserve in MDSCs when compared to DMSO-treated controls (Figures 4C andD). Graphing of ECAR vs. OCR showed increase in ECAR in MDSCs treated with enzalutamide (Figure 4E). WT BMDMs treated in vitro with enzalutamide or BMDMs generated from bone marrow of MARKO mice also exhibited decreased mitochondrial respiration and increased glycolysis (Figure 4F). The metabolic changes induced by enzalutamide were dependent on AR, as treatment of MARKO BMDMs with enzalutamide did not alter these metabolic changes (Figure 4F). In addition, in vitro treatment of tumor-associated CD11b+ cells from human prostate tumor xenografts models PC3M and PCaX led to a similar metabolic shift, indicating that tumor-associated myeloid cell metabolism was altered by AR inhibition (Figures 4G,H).

Reference: Cancer Immunol Res. 2020 Sep; 8(9): 1215–1227. https://www.ncbi.nlm.nih.gov/pmc/articles/PMC7484281/

In vivo activity

Human bone tumor biopsy studies show that androgen production is present in bone tumors and activation of AR signaling contributes to bone tumor growth. To determine how ERG induced androgen synthesis contributes to bone tumor growth and whether ERG activity can be a predictor for anti-androgen therapy responsiveness, we utilized an intratibial bone tumor growth model with VCaP scr and ERG shRNA cells to address these questions. Tumor growth analysis of both cells lines show that VCaP ERG shRNA cells grow more slowly, requiring 4 weeks longer to reach similar growth sizes as assessed by luciferase imaging (Fig. 3a and d). When both tumors reach comparable size, the animals bearing bone tumors were randomized and treated with vehicle (Tween 80) or Enzalutamide by oral gavage. Tumor growth rate is slower in VCaP shERG tumors compared to scr shRNA tumors (Fig.3b and d). Enzalutamide treatment resulted in significant reduction in tumor burden in VCaP scr shRNA group compared to VCaP shERG group (Fig.3c and d). These data suggest that ERG signaling contributes to bone tumor growth and that AR targeting with enzalutamide significantly inhibits the bone tumor growth presumably through interfering with reduced ERG signaling.

References: BMC Cancer. 2019; 19: 972. https://www.ncbi.nlm.nih.gov/pmc/articles/PMC6802314/