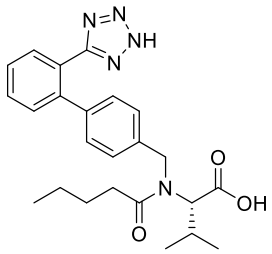
Product data sheet

MedKoo Cat#: 318970 Name: Valsartan CAS#: 137862-53-4 Chemical Formula: $C_{24}H_{29}N_5O_3$ Exact Mass: 435.22704 Molecular Weight: 435.528	
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:

Valsartan is an angiotensin II receptor antagonist (commonly called an ARB, or angiotensin receptor blocker), that is selective for the type I (AT1) angiotensin receptor. Valsartan is mainly used for treatment of high blood pressure, congestive heart failure, and to increase the chances of living longer after a heart attack. Valsartan is used to treat high blood pressure, congestive heart failure, and to reduce death for people with left ventricular dysfunction after having had a heart attack.

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	65.14	149.57
DMF	30.0	68.88
Ethanol	30.0	68.88
Ethanol:PBS (pH 7.2) (1:1)	0.5	1.15
Water	87.0	499.76

4. Stock solution preparation table:

Concentration / Solvent Volume / Mass	**1 mg**	**5 mg**	**10 mg**
1 mM	2.30 mL	11.48 mL	22.96 mL
5 mM	0.46 mL	2.30 mL	4.59 mL
10 mM	0.23 mL	1.15 mL	2.30 mL
50 mM	0.05 mL	0.23 mL	0.46 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. Liu J, Feng Y, Sun C, Zhu W, Zhang QY, Jin B, Shao QY, Xia YY, Xu PF, Zhang M, Jiang CM. Valsartan ameliorates high glucose-induced peritoneal fibrosis by blocking mTORC1 signaling. Exp Biol Med (Maywood). 2020 Jun;245(11):983-993. doi: 10.1177/1535370220919364. Epub 2020 May 14. PMID: 32408765; PMCID: PMC7427179.
2. Sui X, Wei H, Wang D. Novel mechanism of cardiac protection by valsartan: synergetic roles of TGF-β1 and HIF-1α in Ang II-mediated fibrosis after myocardial infarction. J Cell Mol Med. 2015 Aug;19(8):1773-82. doi: 10.1111/jcmm.12551. Epub 2015 Mar 30. PMID: 25823960; PMCID: PMC4549028.

In vivo study

Product data sheet

1. Li Y, Guo J, Yu H, Liu X, Zhou J, Chu X, Xu Q, Sun T, Peng L, Yang X, Tang X. Valsartan Prevented Neointimal Hyperplasia and Inhibited SRSF1 Expression and the TLR4-iNOS-ERK-AT1 Receptor Pathway in the Balloon-injured Rat Aorta. Physiol Res. 2021 Jun 1. Epub ahead of print. PMID: 34062069.
2. Tehrani AY, White Z, Milad N, Esfandiarei M, Seidman MA, Bernatchez P. Blood pressure-independent inhibition of Marfan aortic root widening by the angiotensin II receptor blocker valsartan. Physiol Rep. 2021 May;9(10):e14877. doi: 10.14814/phy2.14877. PMID: 34042309; PMCID: PMC8157789.

7. Bioactivity

Biological target:

Valsartan (CGP 48933) is an angiotensin II receptor antagonist.

In vitro activity

Exposure of HPMCs to AngII increased the protein expression levels of p-mTOR, p-4EBP1, and p-S6K1, as assessed by Western blot, and HG had the similar role as the AngII. Cotreatment with valsartan ameliorated the HG-induced or AngII-induced upregulation of components of the mTORC1 pathway (Figure 6(a) and (b)). To further determine the mechanisms associated with the regulation of ECM accumulation by valsartan, this study subsequently analyzed the effect of the specific mTOR agonist MHY1485 on valsartan-mediated α-SMA and collagen I expression. The data showed that, compared with valsartan, MHY1485 dramatically increased the expression of α-SMA and collagen I, even in the presence of valsartan, as determined by Western blot (Figure 6(c)and (d)). Taken together, these results suggest that the protective effect of valsartan against PF is related to the downregulation of the activity of the mTORC1 pathway.

Reference: Exp Biol Med (Maywood). 2020 Jun; 245(11): 983–993. https://www.ncbi.nlm.nih.gov/pmc/articles/PMC7427179/

In vivo activity

The results of the current study indicated that: 1) valsartan at a dose of 20 mg/kg/day treated balloon injured rats for both 14 and 28 days significantly inhibited the neointimal hyperplasia and reduced the aortic SRSF1 expression; 2) valsartan decreased the aortic angiotensin II and iNOS levels while increased the aortic eNOS level; and 3) valsartan downregulated the TLR4 and AT1 receptor while upregulated the AT2 receptor mRNA and protein expression. Valsartan also decreased the aortic p-ERK protein expression. These findings suggest that the therapeutic potential of valsartan in attenuating neointimal hyperplasia and inhibiting the TLR4-iNOS-ERK-AT1 receptor pathway and SRSF1 expression in balloon-injured rat aorta.

Reference: Physiol Res. 2021 Jun 1. https://pubmed.ncbi.nlm.nih.gov/34062069/