

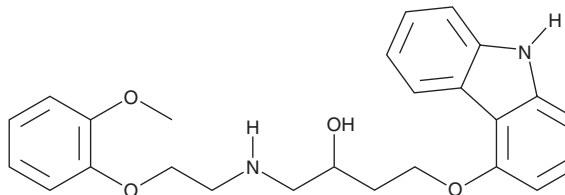
# PRODUCT INFORMATION



## VK-II-86

Item No. 36677

**CAS Registry No.:** 955371-84-3  
**Formal Name:** 4-(9H-carbazol-4-yloxy)-1-[[2-(2-methoxyphenoxy)ethyl]amino]-2-butanol  
**MF:** C<sub>25</sub>H<sub>28</sub>N<sub>2</sub>O<sub>4</sub>  
**FW:** 420.5  
**Purity:** ≥90%  
**UV/Vis.:** λ<sub>max</sub>: 244 nm  
**Supplied as:** A solid  
**Storage:** -20°C  
**Stability:** ≥4 years



Information represents the product specifications. Batch specific analytical results are provided on each certificate of analysis.

### Laboratory Procedures

VK-II-86 is supplied as a solid. A stock solution may be made by dissolving the VK-II-86 in the solvent of choice, which should be purged with an inert gas. VK-II-86 is soluble in the organic solvent DMSO.

### Description

VK-II-86 is an inhibitor of store-overload-induced calcium release (SOICR) and a derivative of carvedilol (Item No. 15418).<sup>1</sup> It inhibits SOICR in HEK293 cells expressing the ryanodine receptor 2 (RyR2) R4496C (RyR2<sup>R4496C</sup>) mutation (IC<sub>50</sub> = 16.8 μM), a mutation that results in spontaneous calcium release from the endoplasmic reticulum. VK-II-86 (1 μM) inhibits the inward-rectifier potassium channel 2.1 (K<sub>ir</sub>2.1), cardiac late sodium current (late I<sub>Na</sub>), and L-type calcium current (I<sub>Ca</sub>) in isolated canine cardiomyocytes and delayed-rectifier potassium current (I<sub>Kr</sub>) in HEK293 cells expressing human-ether-a-go-go (hERG), also known as K<sub>v</sub>11.1, in hypokalaemic, but not normokalaemic, conditions.<sup>2</sup> It is also an antagonist of toll-like receptor 4 (TLR4; IC<sub>50</sub> = 32.55 μM in HEK293 cells expressing the human receptor) and inhibits hyperpolarization-activated cyclic nucleotide gated potassium channel 4 (HCN4) in COS-7 cells expressing HCN4 when used at a concentration of 10 μM.<sup>3</sup> VK-II-86 prevents hypokalaemia-induced ventricular arrhythmia in isolated Langendorff-perfused mouse hearts.<sup>2</sup> Unlike the β-adrenergic receptor antagonist carvedilol, it does not reverse isoproterenol-induced increases in heart rate or decrease resting heart rate in RyR2<sup>R4496C</sup>-expressing mice.<sup>4</sup>

### References

1. Smith, C.D., Wang, A., Vembaiyan, K., *et al.* Novel carvedilol analogues that suppress store-overload-induced Ca<sup>2+</sup> release. *J. Med. Chem.* **56**(21), 8625-8655 (2013).
2. Robinson, V.M., Alsalahat, I., Freeman, S., *et al.* A carvedilol analogue, VK-II-86, prevents hypokalaemia-induced ventricular arrhythmia through novel multi-channel effects. *Br. J. Pharmacol.* **179**(11), 2713-2732 (2022).
3. Xu, Y., Chen, S., Cao, Y., *et al.* Discovery of novel small molecule TLR4 inhibitors as potent anti-inflammatory agents. *Eur. J. Med. Chem.* **154**, 253-266 (2018).
4. Zhou, Q., Xiao, J., Jiang, D., *et al.* Carvedilol and its new analogs suppress arrhythmogenic store overload-induced Ca<sup>2+</sup> release. *Nat. Med.* **17**(8), 1003-1009 (2011).

#### WARNING

THIS PRODUCT IS FOR RESEARCH ONLY - NOT FOR HUMAN OR VETERINARY DIAGNOSTIC OR THERAPEUTIC USE.

#### SAFETY DATA

This material should be considered hazardous until further information becomes available. Do not ingest, inhale, get in eyes, on skin, or on clothing. Wash thoroughly after handling. Before use, the user must review the [complete](#) Safety Data Sheet, which has been sent via email to your institution.

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