# VU041

**Cat. No.:** HY-118607

**CAS No.:** 332943-64-3

**Molecular Formula:** $C_{19}H_{20}F_3N_3O$

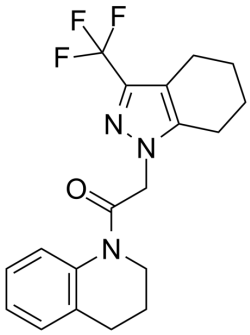
**Molecular Weight:** 363.38

**Target:** Potassium Channel; Parasite

**Pathway:** Membrane Transporter/Ion Channel; Anti-infection

**Storage:**

| | | |
|---|---|---|
| Powder | -20°C | 3 years |
| | 4°C | 2 years |
| In solvent | -80°C | 6 months |
| | -20°C | 1 month |



## SOLVENT & SOLUBILITY

**In Vitro**

DMSO : 20 mg/mL (55.04 mM; ultrasonic and warming and heat to 60°C)

| Preparing Stock Solutions | Solvent / Mass / Concentration | 1 mg | 5 mg | 10 mg |
|---|---|---|---|---|
| | 1 mM | 2.7519 mL | 13.7597 mL | 27.5194 mL |
| | 5 mM | 0.5504 mL | 2.7519 mL | 5.5039 mL |
| | 10 mM | 0.2752 mL | 1.3760 mL | 2.7519 mL |

Please refer to the solubility information to select the appropriate solvent.

**In Vivo**

1. Add each solvent one by one: 10% DMSO >> 40% PEG300 >> 5% Tween-80 >> 45% saline
   Solubility: 2 mg/mL (5.50 mM); Suspended solution; Need ultrasonic
2. Add each solvent one by one: 10% DMSO >> 90% (20% SBE-β-CD in saline)
   Solubility: 2 mg/mL (5.50 mM); Suspended solution; Need ultrasonic
3. Add each solvent one by one: 10% DMSO >> 90% corn oil
   Solubility: ≥ 2 mg/mL (5.50 mM); Clear solution

## BIOLOGICAL ACTIVITY

**Description**

VU041 is a first submicromolar-affinity inhibitor of ***Anopheles (An.) gambiae*** and ***Aedes (Ae.) aegypti*** inward rectifier potassium 1 (Kir1) channels with $IC_{50}$ values of 2.5 μM and 1.7 μM, respectively. VU041 inhibits appreciably is mammalian Kir2.1 ($IC_{50}$ of 12.7 μM), and has less inhibitory effect on mammalian Kir1.1, Kir4.1, Kir6.2/SUR1, and Kir7.1. VU041 also induces impaired Malpighian tubule function[1].

**$IC_{50}$ & Target**

IC50: 2.5 μM (Anopheles (An.) gambiae Kir1 channels), 1.7 μM (Aedes (Ae.) aegypti Kir1 channels) and 12.7 μM (Mammalian Kir2.1)[1]

| | |
|---|---|
| **In Vitro** | VU041 is only moderately metabolized by cytochrome P450 enzymes and does not appear to be metabolized by esterases. VU041 is the first small-molecule inhibitor of mosquito Kir1 channels that exhibits topical toxicity in both insecticide-susceptible and -resistant lines of mosquitoes[1].<br>MCE has not independently confirmed the accuracy of these methods. They are for reference only. |
| **In Vivo** | Topical VU041 application to adult female mosquitoes of both species inhibits their fecundity. Importantly, VU041 is selective for mosquito Kir channels over mammalian Kir channel orthologs and non-lethal to adult honey bees (Apis mellifera). The in vivo experiments of blood meal processing and diuretic capacity suggest that one mechanism of action of VU041 is the disruption of excretory functions mediated by Malpighian tubules[1].<br>MCE has not independently confirmed the accuracy of these methods. They are for reference only. |

## REFERENCES

[1]. Swale DR, et al. An insecticide resistance-breaking mosquitocide targeting inward rectifier potassium channels in vectors of Zika virus and malaria. Sci Rep. 2016 Nov 16;6:36954.



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