

# Pilaralisib

**Catalog No: tcsc1546**



## Available Sizes

**Size:** 5mg

**Size:** 10mg

**Size:** 50mg



## Specifications

**CAS No:**

934526-89-3

**Formula:**

$C_{25}H_{25}ClN_6O_4S$

**Pathway:**

PI3K/Akt/mTOR

**Target:**

PI3K

**Purity / Grade:**

>98%

**Solubility:**

DMSO : 6 mg/mL (11.09 mM; Need ultrasonic and warming)

**Alternative Names:**

XL-147;SAR245408

**Observed Molecular Weight:**

541.02

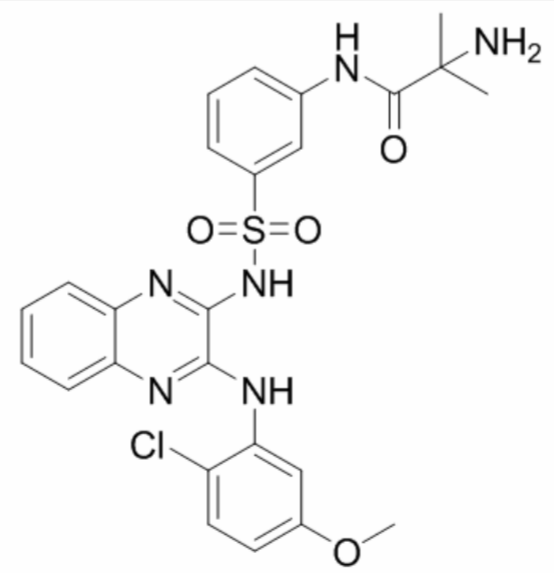
## Product Description

Pilaralisib (XL147; SAR245408) is a potent and highly selective class I **PI3Ks** inhibitor with **IC<sub>50</sub>s** of 39 nM, 383 nM, 23 nM and 36 nM for PI3K $\alpha$ , PI3K $\beta$ , PI3K $\gamma$ , and PI3K $\delta$ .

IC<sub>50</sub> & Target: IC<sub>50</sub>: 39 nM (PI3K $\alpha$ ), 383 nM (PI3K $\beta$ ), 36 nM (PI3K $\delta$ ), 23 nM (PI3K $\gamma$ ), 6974 nM (VPS34), 4750 nM (DNA-PK)<sup>[1]</sup>

**In Vitro:** Pilaralisib (XL147) displays potent inhibitory activity against Class I PI3K isoforms p110 $\alpha$ , p110 $\delta$ , and p110 $\gamma$ , with IC<sub>50</sub>s of 39, 36, and 23 nM, respectively. Pilaralisib (XL147) is less potent against the remaining Class I isoform, p110 $\beta$ , with an IC<sub>50</sub> value of 383 nM. The IC<sub>50</sub> value for inhibition of PI3K $\alpha$  by Pilaralisib (XL147) is determined at various concentrations of ATP, revealing XL147 to be an ATP-competitive inhibitor with an equilibrium inhibition constant ( $K_i$ ) value of 42 nM. Pilaralisib (XL147) has relatively weak inhibitory activity toward the class III PI3K vacuolar sorting protein 34 (VPS34; IC<sub>50</sub> value of ~7.0 M) and the PI3K-related DNA-dependent protein kinase (DNA-PK; IC<sub>50</sub> value of 4.75  $\mu$ M). In an mTOR kinase immunoprecipitation assay using cell lysates, Pilaralisib (XL147) does not inhibit mTOR activity toward the physiologic substrate protein eukaryotic translation initiation factor 4E-binding protein 1 (4EBP1; IC<sub>50</sub> >15  $\mu$ M). Consistent with its inhibitory activity against purified PI3K proteins, Pilaralisib (XL147) inhibits EGF-induced PIP<sub>3</sub> production in PC-3 and MCF7 cells in serum-free medium with IC<sub>50</sub>s of 220 and 347 nM, respectively. The ability of Pilaralisib (XL147) to inhibit phosphorylation of key signaling proteins downstream of PI3K is examined by assessing its effects on EGF-stimulated phosphorylation of AKT and on nonstimulated phosphorylation of S6 in PC-3 cells in serum-free media by cell-based ELISA. Pilaralisib (XL147) inhibits these activities with IC<sub>50</sub>s of 477 and 776 nM, respectively<sup>[1]</sup>.

**In Vivo:** The ability of Pilaralisib (XL147) to inhibit this endogenous phosphorylation of AKT, p70S6K, and S6 is examined following a single oral dose of 10, 30, 100, or 300 mg/kg. The tumors are harvested 4, 24, or 48 hours postdose and homogenized in lysis buffer. Tumor lysates from each animal (n=4) are then pooled for each group and analyzed for levels of total and phosphorylated AKT, p70S6K, and S6 by Western immunoblotting. Administration of Pilaralisib (XL147) causes a dose-dependent decrease in phosphorylation of AKT, p70S6K, and S6 in the tumors, reaching a maximum of 81% inhibition of AKT phosphorylation at 300 mg/kg at 4 hours. The dose-response relationships derived from the 4-hour time point predict 50% inhibition of AKT, p70S6K, and S6 phosphorylation at doses of approximately 100 mg/kg (pAKT<sup>T308</sup>), 54 mg/kg (pAKT<sup>S473</sup>), 71 mg/kg (p-p70S6K), and 103 mg/kg (pS6). The inhibition of AKT, p70S6K, and S6 phosphorylation in MCF7 tumors following a 100 mg/kg dose of Pilaralisib (XL147) is maximal at 4 hours, reaching 55% to 75%; however, the level of inhibition decreased to 8% to 45% by 24 hours, and only minimal or no inhibition was evident by 48 hours. Following a 300 mg/kg dose of Pilaralisib (XL147), inhibition is also maximal at 4 hours (65%-81%). However, in contrast with the 100 mg/kg dose, inhibition at 24 hours (51%-78%) is almost comparable with that seen at 4 hours, and partial inhibition (25%-51%) persisted through 48 hours<sup>[1]</sup>.



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