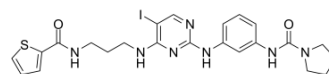


## BX795

<b>Cat. No.:</b>	HY-10514		
<b>CAS No.:</b>	702675-74-9		
<b>Molecular Formula:</b>	C <sub>23</sub> H <sub>26</sub> I <sub>N</sub> <sub>7</sub> O <sub>2</sub> S		
<b>Molecular Weight:</b>	591.47		
<b>Target:</b>	PDK-1; IKK; Autophagy		
<b>Pathway:</b>	PI3K/Akt/mTOR; NF-κB; Autophagy		
<b>Storage:</b>	Powder	-20°C	3 years
		4°C	2 years
	In solvent	-80°C	6 months
		-20°C	1 month



### SOLVENT & SOLUBILITY

<b>In Vitro</b>	DMSO : 50 mg/mL (84.54 mM; Need ultrasonic)			
		Solvent Concentration	Mass	
			1 mg	5 mg
			10 mg	
<b>Preparing Stock Solutions</b>	<b>1 mM</b>	1.6907 mL	8.4535 mL	16.9070 mL
	<b>5 mM</b>	0.3381 mL	1.6907 mL	3.3814 mL
	<b>10 mM</b>	0.1691 mL	0.8454 mL	1.6907 mL
Please refer to the solubility information to select the appropriate solvent.				
<b>In Vivo</b>	<p>1. Add each solvent one by one: 10% DMSO &gt;&gt; 40% PEG300 &gt;&gt; 5% Tween-80 &gt;&gt; 45% saline Solubility: ≥ 2.5 mg/mL (4.23 mM); Clear solution</p> <p>2. Add each solvent one by one: 10% DMSO &gt;&gt; 90% corn oil Solubility: ≥ 2.5 mg/mL (4.23 mM); Clear solution</p>			

### BIOLOGICAL ACTIVITY

<b>Description</b>	BX795 is a potent and selective inhibitor of PDK1, with an IC <sub>50</sub> of 6 nM. BX795 is also a potent and relatively specific inhibitor of TBK1 and IKKε, with an IC <sub>50</sub> of 6 and 41 nM, respectively. BX795 blocks phosphorylation of S6K1, Akt, PKCδ, and GSK3β, and has lower selectivity over PKA, PKC, c-Kit, GSK3β etc. BX795 modulates autophagy <sup>[1][2][3][4]</sup> .		
<b>IC<sub>50</sub> &amp; Target</b>	PDK1 6 nM (IC <sub>50</sub> )	TBK1 6 nM (IC <sub>50</sub> )	IKKε 41 nM (IC <sub>50</sub> )
<b>In Vitro</b>	BX795 effectively blocks PDK1 activity in PC-3 cells, as shown by their ability to block phosphorylation of S6K1, Akt, PKCδ, and GSK3β. BX795 potently inhibits tumor cell growth on plastic with IC <sub>50</sub> of 1.6, 1.4, and 1.9 μM for MDA-468, HCT-116 and MiaPaca cells, respectively. In soft agar, BX795 displays higher growth inhibition with IC <sub>50</sub> of 0.72, and 0.25 μM for MDA-468,		

and PC-3 cells, respectively<sup>[1]</sup>. In addition, BX795, as an inhibitor of the TBK1/IKK $\epsilon$ , blocks TBK1- and IKK $\epsilon$ -mediated activation of IRF3 and production of IFN- $\beta$ <sup>[2]</sup>. In platelet physiological responses, BX795 produces inhibitory effect on 2-MeSADP-induced or collagen-induced aggregation, ATP secretion and thromboxane generation<sup>[3]</sup>. MCE has not independently confirmed the accuracy of these methods. They are for reference only.

## PROTOCOL

### Kinase Assay <sup>[1]</sup>

PDK1 is assayed in a direct kinase assay and a coupled assay format measuring PDK1- and PtdIns-3,4-P2-mediated activation of AKT2. For the coupled assay, the final assay mixture (60  $\mu$ L) contained: 15 mM MOPS, pH 7.2, 1 mg/mL bovine serum albumin, 18 mM  $\beta$ -glycerol phosphate, 0.7 mM dithiothreitol, 3 mM EGTA, 10 mM MgOAc, 7.5  $\mu$ M ATP, 0.2  $\mu$ Ci of [ $\gamma$ -<sup>33</sup>P]ATP, 7.5  $\mu$ M biotinylated peptide substrate (biotin-ARRRDGGGAQPFRPRAATF), 0.5  $\mu$ L of PtdIns-3,4-P2-containing phospholipid vesicles, 60 pg of purified recombinant human PDK1, and 172 ng of purified recombinant human AKT2. After incubation for 2 h at room temperature, the biotin-labeled peptide is captured from 10  $\mu$ L of the assay mixture on streptavidin-coated SPA beads, and product formation is measured by scintillation proximity in a Wallac MicroBeta counter. The product formed is proportional to the time of incubation and to the amount of PDK1 and inactive AKT2 added. PDK1 is added at suboptimal levels so that the assay could sensitively detect inhibitors of AKT2 activation as well as direct inhibitors of PDK1 or AKT2. To measure PDK1 activity directly, the final assay mixture (60  $\mu$ L) contained 50 mM Tris-HCl, pH 7.5, 0.1 mM EGTA, 0.1 mM EDTA, 0.1%  $\beta$ -mercaptoethanol, 1 mg/mL bovine serum albumin, 10 mM MgOAc, 10  $\mu$ M ATP, 0.2  $\mu$ Ci of [ $\gamma$ -<sup>33</sup>P]ATP, 7.5  $\mu$ M substrate peptide (H2N-ARRRGVTTKTFCGT), and 60 ng of purified recombinant human PDK1. After 4 h at room temperature, we add 25 mM EDTA and spotted a portion of the reaction mixture on Whatman P81 phosphocellulose paper. The filter paper is washed three times with 0.75% phosphoric acid and once with acetone. After drying, the filter-bound labeled peptide is quantified using a Fuji phosphorimager.

MCE has not independently confirmed the accuracy of these methods. They are for reference only.

### Cell Assay <sup>[1]</sup>

Cells seeded at a low density (1,500-3,000 cells/well, 0.1 mL/well, 96-well plates) are incubated overnight. Compound treatments are made by adding 10  $\mu$ L/well of the compound in 1% dimethyl sulfoxide and growth medium (final concentration of dimethyl sulfoxide, 0.1%), followed by brief shaking. Treated cells are incubated for 72 hours, and viability is measured by the addition of 10  $\mu$ L of the metabolic dye WST-1. The WST-1 signal is read in a plate reader at 450 nm, and a no cell, or zero time cell, background is subtracted to calculate the net signal. Results are reported as the average $\pm$ S.E. of two or more replicates.

MCE has not independently confirmed the accuracy of these methods. They are for reference only.

## CUSTOMER VALIDATION

- Autophagy. 2017 Jan 2;13(1):133-148.
- J Cell Biol. 2021 Feb 1;220(2):e201911025.
- Oxid Med Cell Longev. 2021 Jan 27.
- Mol Cell Proteomics. 2018 Dec;17(12):2434-2447.
- J Cell Sci. 2018 Nov 30;131(23). pii: jcs226241.

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## REFERENCES

- [1]. Feldman RI, et al. Novel small molecule inhibitors of 3-phosphoinositide-dependent kinase-1. J Biol Chem. 2005 May 20;280(20):19867-74.
- [2]. Clark K, et al. Use of the pharmacological inhibitor BX795 to study the regulation and physiological roles of TBK1 and IkappaB kinase epsilon: a distinct upstream kinase mediates Ser-172 phosphorylation and activation. J Biol Chem. 2009 May 22;284(21):141

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[3]. Dangelmaier C, et al. PDK1 selectively phosphorylates Thr(308) on Akt and contributes to human platelet functional responses. *Thromb Haemost.* 2014 Mar 3;111(3):508-17.

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**Caution: Product has not been fully validated for medical applications. For research use only.**

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