

# Autophagy Inducers

Autophagy is the breakdown of unnecessary or dysfunctional cell components by lysosomes. This process can promote survival during cellular starvation by maintaining cellular energy levels. Autophagy is also a form of programmed cell death that can be initiated by processes such as development, differentiation, neurodegenerative diseases, stress, infection, and cancer<sup>1</sup>. Although autophagy may improve survival of starved cells, it is also a tumor suppressor. Autophagy is induced by the presence of irregular proteins produced by chemotherapeutics; degradation of these proteins and organelles limits cell growth<sup>2</sup>. Prolonged autophagy also leads to a high turnover rate of proteins and organelles which may kill cancer cells<sup>3</sup>. For a selection of compounds that induce autophagy across various disease models including cancer, fibrosis, and pathogenic infection, see the representative list below.

A0820 Acetyl-benzylisothiocyanate-L-cysteine	H9711 (Z)-4-Hydroxytamoxifen
A4440 Allicin	H9716 (E,Z)-4-Hydroxytamoxifen
A4441 Allicin (aqueous)	M1744 Melittin
A6132 Apicidin	M4454 MLN-4924
A6818 Arenobufagin	N3346 Nilotinib
A7460 Asparaginase	O0400 Obatoclox
A9710 AZD-2014	O6932 Oridonin
B1653 Benzyl Isothiocyanate	P3465 Piperine
B1996 BEZ235	P3561 Piperlongumine
C0265 Carnosic Acid	P4492 PLX4720
C2947 Chlorpromazine Hydrochloride	P7000 PR-619
C5654 Concanavalin A	P7219 Pseudolaric acid B
D0375 Dasatinib Monohydrate	P8167 Puromycin Aminonucleoside
D4802 17-DMAG	P8168 Puromycin Dihydrochloride
E0813 Ecdysterone	P9200 PX-866
E2003 Efavirenz	S0134 Saikosaponin D
E6846 Erlotinib Monohydrochloride	S7603 Stavudine
E7357 Esomeprazole Potassium	S8044 R,S-Sulforaphane
E7356 Esomeprazole Magnesium Trihydrate	T1968 Terpinen-4-ol
E7657 Etoposide	V0146 Valsartan
E7658 Etoposide phosphate	V0352 Vandetanib
E8419 Everolimus	W5727 Wogonoside
G3461 Ginsenoside F2	Y4802 YM-201636
H9712 (E)-4-Hydroxytamoxifen	

#### References:

1. Kobayashi S. Biol Pharm Bull. 2015;38(8):1098-103.
2. Mathew R, Karp CM, Beaudoin B, et al. Cell. 2009 Jun 12;137(6):1062-75.
3. Yang ZJ, Chee CE, Huang S, et al. Mol Cancer Ther. 2011 Sep;10(9):1533-41.

