

Endoplasmic Reticulum Stress Compound Library

Chemical Properties

CAS No. :

Formula:

Molecular Weight:

Appearance: no data available

Storage: Powder: -20°C for 3 years | In solvent: -80°C for 1 year

Biological Description

Description

The endoplasmic reticulum (ER) is the cellular organelle that is critical for protein folding and secretion, calcium homeostasis, and lipid biosynthesis. The ER is the site of multiple post-translational modifications such as glycosylation and disulfide bond formation. It is also the organelle in which proteins are folded into their proper conformation and in which multi-subunit proteins are assembled. Endoplasmic reticulum stress (ER stress), such as unfolded protein response (UPR) and ER overload response (EOR), occurs when proteins are not properly folded or conformed (misfolded protein) or homeostasis cannot be maintained such as disturbances in redox regulation, calcium regulation, glucose deprivation, and viral infection. As a result, ER-localized chaperones such as glucose-regulated proteins (GRP78, GRP94, etc.) are induced, protein synthesis is slowed down, and a protein degrading system is initiated. However, excessive and prolonged stresses lead cells to caspase-12 mediated apoptosis.

ER stress occurs not only in both normal and pathophysiological conditions, but has also been implicated in multiple disorders such as cancers, type 2 diabetes, ischemia, viral infection, and neurodegenerative disorders. ER stress can also be induced by hypoxia. This has implications for solid tumors which usually exhibit hypoxia in their cores. Insulin resistance is also associated with ER stress and the treatment of type 2 diabetic mice with chemical chaperones which assist protein folding in the ER restored insulin sensitivity. It has also been proposed that agents that cause ER stress can be used directly as chemotherapeutic agents.

TargetMol's Endoplasmic Reticulum Stress Compound Library collects xnum ER stress related compounds, targeting different targets in ER stress signaling pathway such as PERK, IRE1, ATF6, GRP78, etc. It is an effective tool for research in endoplasmic reticulum stress and related diseases.

Reference

Cell Stem Cell. 2022 Apr 29(4) 545-558.
Blood. 2021, 137(11): 1478-1490.
Nucleic Acids Research. 2021.
Nature Communications. 2023, 14(1): 7574.
Advanced Science. 2020, 7(16): 2000925.
Angewandte

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