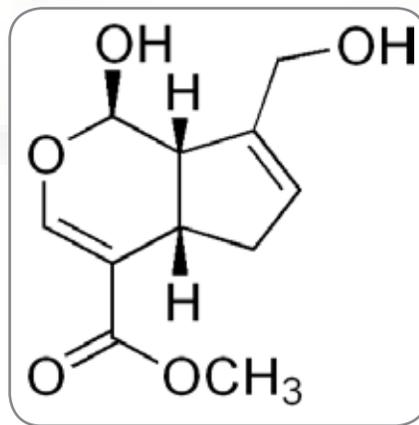


Genipin

Genipin (G1853) is a compound found in the fruit extract of plants in the genus *Gardenia*, a group of flowering evergreen shrubs and small trees. Genipin was initially discovered as a cross-linker for proteins but is now known as an inhibitor of uncoupling protein 2 (UCP2), a mitochondrial carrier protein that negatively regulates glucose-stimulated insulin secretion¹. When UCP2 is expressed at high levels, insulin secretion is down-regulated; this mechanism likely contributes to the development of type 2 diabetes mellitus².



G1853 Genipin

Genipin displays a broad variety of biological activities including neuroprotective effects. Genipin protects hippocampal neurons against amyloid- β toxicity³. Amyloid- β oligomer aggregation is a highly neurotoxic hallmark of Alzheimer's disease. Genipin also protects cells from calcimycin-induced cytotoxicity mediated by endoplasmic reticulum stress⁴. This compound may be effective in preventing or limiting the neurodegeneration observed in Alzheimer's disease and Parkinson's disease, both of which involve oxidative stress.

Genipin also exhibits other neuroactive effects. This compound displays antidepressant activity equal to that of **Fluoxetine Hydrochloride (F4780)**, a well-established serotonin reuptake inhibitor⁵. In animals undergoing the forced swim and tail suspension tests, genipin improves performance, potentially by increasing levels of serotonin and norepinephrine.

Genipin has been studied extensively for its protein cross-linking activity; new research applications have recently increased interest in this compound. Proteins cross-linked with genipin are currently under investigation in various studies to enhance drug delivery, promote differentiation, and design tissue engineering scaffolds⁶⁻⁸.

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