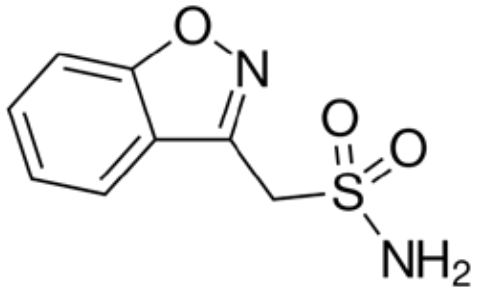
Zonisamide

Zonisamide (Z5653) is an anticonvulsant that is used to treat partial-onset seizures, mixed seizure types of Lennox–Gastaut syndrome, myoclonic seizures, and generalized tonic clonic seizures. Zonisamide inhibits voltage-dependent sodium channels, T-type calcium channels, and carbonic anhydrase. It suppresses the development of neuronal hypersynchronization, a state of brain activity associated with epileptiform seizures[1]. This compound also modulates GABAergic and glutamatergic neurotransmission[1].

Zonisamide exhibits biological activity in many other research applications beyond epilepsy and seizure development. In animal models of Parkinson's disease, this compound reduces nigrostriatal dopaminergic cell death through brain-derived neurotrophic factor signaling and improves survival of dopaminergic neurons and motor function[2].



Z5653 Zonisamide

In animal models of chronic constrictive injury-induced neuropathic pain, zonisamide increases latency to paw withdrawal, indicating analgesic or antinociceptive activity. This occurs in models of chemical, mechanical, and thermal hyperalgesia and allodynia[3].

Zonisamide is also under investigation for its anti-obesity characteristics. In clinical settings, zonisamide improves weight loss[4]. This compound also prevents weight gain, hyperphagia, and elevation in blood glucose levels in animals co-administered second-generation antipsychotics associated with weight gain, such as olanzapine[5].

References:
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5. Wallingford NM, Sinnayah P, Bymaster FP, et al. Neuropsychopharmacology. 2008 Nov;33(12):2922-33.