

NOVEL SULFATED NEUROSTEROID MOLECULES FOR TREATING MIGRAINES AND PAIN

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T-021437

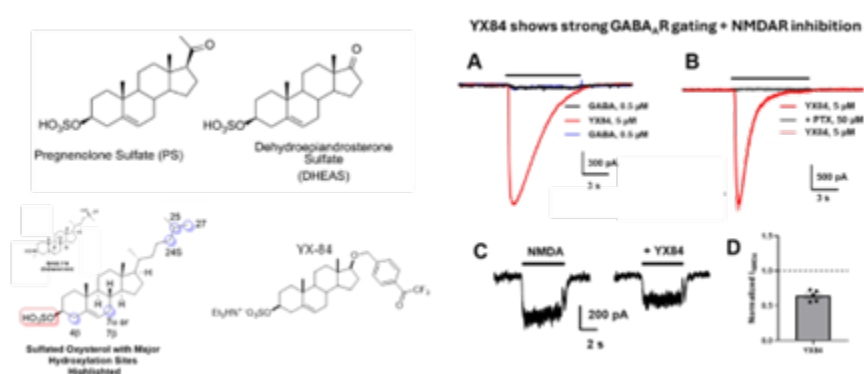
Published date: 5/23/2026

Value Proposition: Steroidal trifluoromethyl ketone modulators of GABA-A and NMDA receptors for treating migraine, headache, and pain.

Technology Description

Clinical and scientific experts in modulating GABA-A and NMDA receptors at Washington University in St. Louis (WashU) have developed novel sulfated neurosteroid small molecules to treat migraines, headaches, and pain. The GABA system is the major inhibitory signaling pathway of the brain and central nervous system (CNS); NMDA is the major excitatory pathway. Both contribute significantly to regulating CNS function. Dysfunction in these two systems is known to be at the core of numerous depressive, neurological, and neuropsychiatric disorders.

To directly target these key systems, the WashU researchers developed sulfated steroids, non-sulfated analogues, and modulators of GABA-A and/or NMDA receptors to treat migraines, headaches, and peripheral pain.



Stage of Research

- Lead compound identified (YX84).
- Tested functional effects as a migraine abortive drug in mice.
- Electrophysical data supporting actions at GABA and NMDA channels.
- Chemical synthesis established in crude form.

Publications

Akk G, Covey DF, Evers AS, Mennerick S, Zorumski CF, Steinbach JH. Kinetic and structural determinants for GABA-A receptor potentiation by neuroactive steroids. *Curr Neuropharmacol*. 2010 Mar;8(1):18-25. doi: 10.2174/157015910790909458. PMID: 20808543; PMCID: PMC2866458.

Applications

Treatment of migraine, headache, and peripheral pain

Key Advantages

- Novel small molecules
- Sulfated steroids do not have a side effect of sedation
- Non-sulfated analogues of the sulfated steroids can modulate GABA-A receptors to either potentiate or inhibit activity and could find uses as sedatives, anesthetics and anticonvulsants.

Patent(s): PCT application filed

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