Small molecule therapeutics for treatment of neuropsychiatric disorders

Technology #m11-026

Glial cell line-derived neurotropic factor (GDNF) is an essential protein for the growth, development, and plasticity of dopaminergic and motor neurons. Elevated GDNF levels are associated with decreased risk for neuropsychiatric disorders, including addiction and depression. This technology describes a class of organic molecules designed to specifically elevate GDNF levels in the brain. By selectively inducing GDNF, the small molecules identified in this technology can be potentially used as a treatment for alcohol abuse, depression, Parkinson’s disease, and other neuropsychiatric disorders.

Small molecules specifically induce GDNF production, reducing the risk of side effects

Unlike other small molecules that have been shown to increase GDNF expression, this technology does not also interfere with the signaling of dopamine and other neurotransmitters. The identified compounds specifically induce GDNF production in SHSY5Y cells and GDNF release in C6 cells, and show negligible activation of dopamine receptors, thereby reducing undesirable side effects for increased therapeutic efficacy.

This technology has been demonstrated to induce GDNF expression in vitro. The compounds were also screened against a panel of approximately 50 CNS receptors in order to confirm their specificity to GDNF expressions.

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Applications:

• Potential treatment for alcohol, drug, and other addictions
• Potential treatment for depression
• Potential treatment for Parkinson’s disease
• Potential treatment for neuropathic pain
• Research tool for studying GDNF expression
Advantages:

- These small molecules specifically induce GDNF production without interfering with other signaling pathways in the brain
- Reduced risk of side effects

Patent Information:

Patent Pending (WO/2013/028999)

Patent Pending (US 20150056699)

Tech Ventures Reference: IR M11-026

Related Publications:


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