

Ketamine Metabolites: A Potential Treatment for Depression
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Depression affects approximately 300 million people worldwide and causes 700 thousand suicides annually. Current depression medications are ineffective for approximately 30% of depression affected populations, thus new treatment options are needed. This review covers a brief history of ketamine, the neurochemical pathways it functions on, why it was considered an unacceptable antidepressant option, and examines how its metabolites may cause antidepressant effects. Ketamine is considered an unacceptable treatment option mostly due to its delirium side effects, with some studies also suggesting that chronic use of ketamine could have other negative health effects. However, research suggests that ketamine metabolites may have long lasting antidepressant effects and little to no delirium effects or confirmed health risks. This review argues that ketamine metabolites are a potential treatment option for both major depressive disorder and bipolar depression. To show the link between antidepressant effects and ketamine metabolites, two studies demonstrated that ketamine metabolites are formed in both human and mice subjects. In these studies, ketamine and specific ketamine metabolites were individually administered, and the results suggested long-lasting antidepressant effects and a lack of delirium upon administration of the strictly metabolite solution. Accordingly, specific ketamine metabolites might serve as the next best antidepressant medication. Indeed, these metabolites may represent an effective treatment option for both Major Depressive Disorder and Bipolar Depression, especially in patients for whom current medications have been ineffective.