Schizophrenia drugs raise the volume of a key signaling system in the brain

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Credit: AI-generated image (disclaimer)

All the major groups of medications for schizophrenia turn up the volume of a brain signal known to be muted in individuals with this psychiatric disorder -- a signal that also can be influenced by diet. "This is the first example of a common but specific molecular effect produced by all antipsychotic drugs in any biological system," scientists note in the

current edition of *ACS Chemical Neuroscience*.

In the report, Eric J. Aamodt and colleagues explained that scientists know little about how antipsychotic drugs work, aside from the drugs' effects on one signaling chemical called dopamine. New studies, for instance, suggested that medications like olanzapine, quetiapine, and clozapine also affect other signaling systems in the brain.

These systems, including one termed the Akt signaling pathway, influence behavior by regulating communication between brain cells. To fill those gaps in knowledge, the scientists turned to genetically modified forms of a worm, C. elegans, often used as a stand-in for people in such research. The tiny creatures were wired to glow green to show activity of Akt, a signal that is too quiet in schizophrenic brains.

They found that all of the 13 antipsychotic drugs tested, representative of all major categories of antipsychotic medications, helped the worms maintain their characteristic green glow. The results highlight the importance of Akt signaling in schizophrenia, suggesting that medications or other approaches that increase Akt signaling might help to alleviate the symptoms of schizophrenia. Other labs have identified certain dietary measures that may also increase Akt signaling.

More information: "Antipsychotic Drugs Activate the C. elegans Akt Pathway via the DAF-2 Insulin/IGF-1 Receptor", *ACS Chemical Neuroscience*.

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