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Experimental compound reduces Gulf War illness-like behavior in mice

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An experimental drug is showing some promise in stopping mood abnormalities and cognitive disorders similar to those seen in people with Gulf War illness, an animal study suggests.

The research was presented Nov. 7 in San Diego at the annual Society for Neuroscience meeting.

"Our results in mice indicate that this small experimental molecule is capable of preventing development of cognitive difficulties and mood deficits if the treatment starts early," said Glenn Lin, the study's principal investigator and a professor of neuroscience at The Ohio State University.

"Importantly, we also found that this small molecule can significantly ameliorate cognitive and mood problems when the symptoms are already present," said Lin, who is part of Ohio State Wexner Medical Center's Neurological Institute.

Gulf War illness is characterized by a cluster of central nervous symptoms believed to have been caused by a combination of wartime exposures that are not well-understood.

"These veterans have difficulty concentrating, difficulty remembering recent information and trouble finding words when speaking. They also often feel down or depressed, irritable, moody and anxious, and have problems getting to sleep or staying asleep," Lin said.

There currently is no medication known to improve these problems.

The Ohio State lab and others working on Gulf War illness have found that dysregulation of glutamate, a major neurotransmitter in the brain, may contribute to the symptoms patients experience. The scientists—including a team at Harvard Medical School—have collaborated to develop potential therapies that normalize the glutamate activity.

The molecule tested at Ohio State normalizes dysregulation of glutamate in the brain, Lin said.

In the study being presented in San Diego, researchers tested the experimental treatment in mice with deficits comparable to those seen in people with Gulf War illness, said lead researcher and post-doctoral researcher Xueqin Wang.

The treated mice were given the compound early, in a study designed to mimic a preventive therapy.

"In people, this would be like giving a drug to soldiers before exposures that could cause illness," she said.

In the treated mice, compared to untreated animals, the researchers saw less behavior that would be comparable to anxiety and depression and also found some evidence of improved memory, she said.

Now, the team is working on a study designed to mimic treatment after symptoms arise—rather than preventive treatment, Wang said.

More research is needed to detail how the molecule may interact with the brain before it could be tested in humans, Lin said, adding that his team and others are studying the compound for use in a variety of

neurological disorders, including Alzheimer's disease and depression.

Provided by The Ohio State University