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Health

Brave pill could combat soldiers' fear

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Scientists are working on a medication to alleviate post-traumatic stress disorder. Photo / AP

The prospect of being able to take a pill to combat fear and anxiety has come a step closer, with a study showing that it is possible to overcome bad memories of painful situations with the help of a chemical that works on the brain.

The discovery raises the possibility of a new class of drugs to alleviate post-traumatic stress disorder or the symptoms of extreme anxiety, or that soldiers or other personnel in dangerous professions will be able to take anti-fear medications during stressful situations.

The study, carried out on laboratory rats, will still take many years of clinical trials in humans but scientists are confident new treatments for fear-related illnesses and anxiety disorders will emerge from the research.

Rather than working in the same way as a conventional sedative or anti-depressant, the new chemical stimulates the area of the brain thought to be involved in remembering a painful situation from the past.

The chemical, called brain-derived neurotrophic factor (BDNF), is naturally produced in the brain and is involved in learning and memory.

When given to the rats, the drug caused them to relearn a painful association so that the memory of it is extinguished but not lost entirely.

"Many lines of evidence implicate BDNF in mental disorders. This work supports the idea that medications could be developed to augment the effects of BDNF, providing opportunities for pharmaceutical treatment of post-traumatic stress disorder and other anxiety disorders," said Thomas Insel, director of the US National Institute of Mental Health.

The study, published in the journal *Science*, investigated how laboratory rats freeze when they hear a sound that they have associated with a small electric shock to their feet.

It is possible to overcome this fear of the sound by training the animals with a series of similar sounds not associated with painful shocks.

But by injecting BDNF - a protein that stimulates the growth of nerve cells - into the brains of the rats, the scientists found they could mimic the effects of the retraining process. This chemical mimicry only worked if

they put BDNF into a part of the brain called the infralimbic prefrontal cortex, a structure that appears to be critical for the extinction of memory.

The drug seems to induce a "memory of safety" in the rats that overrides the fearful memory. In effect, the BDNF drug mimics the effect of retraining the rats to extinguish the memory of the painful situation, said Gregory Quirk of the University of Puerto Rico School of Medicine, who led the investigation.