Reprinted from Science*Daily* Magazine ...

Source: **University Of California - Los Angeles**
Date Posted: **Wednesday, January 02, 2002**
Web Address: **http://www.sciencedaily.com/releases/2002/01/020102074543.htm**

New UCLA Imaging Study First To Show Placebo Alters Brain Function In Individuals With Major Depression

UCLA researchers are the first to report altered brain function in people who respond favorably to placebo treatment for major depression. In addition, the findings show these changes are different than those found in people who respond to antidepressant medication. The study, appearing in the January edition of the peer-reviewed American Journal of Psychiatry, used quantitative electroencephalography (QEEG) imaging to examine brain electrical activity in patients treated for depression with placebo, and others treated with antidepressant medication. The researchers examined QEEG cordance, a measure associated with blood flow in the brain.

Patients who responded to placebo — an inert substance, such as a sugar pill — showed increased activity in the brain's prefrontal cortex, while those who responded to medication showed suppressed activity in that area. Scientists have linked the prefrontal cortex to processes affecting many diverse areas of cognition, including working memory, information processing, behavioral organization and attention.

"People have known for years that if you give placebos to patients with depression or other illnesses, many of them will get better," said Dr. Andrew Leuchter, lead author and director of adult psychiatry at the UCLA Neuropsychiatric Institute and Hospital. "What this study shows, for the first time, is that people who get better on placebo have a change in brain function, just as surely as people who get better on medication. We now know that placebo is, very definitely, an active treatment condition."

These findings and future research in this area eventually could help determine which treatments work best in individual patients, and also could aid development of new medications. In the meantime, the results demonstrate why people struggling with depression should stay the course when seeking an effective treatment.

"These findings show us that there are different pathways to improvement for people suffering from depression," Leuchter said. "Medications are effective, but there may be other ways to help people get better. If we can identify what some of the mechanisms are that help people get better with placebo, we may be able to make treatments more effective."

The study enrolled 51 individuals with major depression. Researchers assigned each to one of two independent, nine-week, double-blind placebo-controlled studies, using either fluoxetine or venlafaxine as the active medication.

A series of five QEEG recordings were performed on each individual during the course of treatment. In addition, each individual's condition was monitored weekly by a research nurse to address safety concerns about dispensing placebo alone to patients with significant depression.

After nine weeks, the blind was broken and subjects were classified as medication responders, placebo responders, medication non-responders or placebo non-responders.

Overall, 52 percent (13 of 25) of the subjects receiving antidepressant medication responded to treatment, while 38 percent (10 of 26) of those receiving placebos responded.

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Images from the study are available online at http://www.placebo.ucla.edu. Information about the Quantitative EEG Laboratory at UCLA and its research is available online at http://www.npi.ucla.edu/uclamdrp/.
