The Role and Use of PEA in Depression & Neurobehavioral Disorders

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The Phenylethylamine Hypothesis of Depression
According to the “Phenylethylamine Hypothesis of Depression” proposed in 1974, the endogenous trace amine Βeta-Peγhylethylamine (PEA) sustains psychological energy just as thyroid hormone sustains physical energy. And a deficit of PEA produces depressions. The Phenylethylamine hypothesis goes on to state that PEA is a neuromodulator of mood, attention, pleasure-seeking behavior, and libido.

The phenylethylamine hypothesis led to simple safe and effective way of treating depression and other affective disorders by based on years of research conducted by Dr. Hector Sabelli and colleagues. Take an oral replacement of PEA as replacement to correct an underlying deficiency or defect in neural transmitter functioning. The majorities of depressed individuals show a significant reduction in their symptoms or have complete recovery without any adverse reactions. Plus, there’re is significant increases in cognitive performance functions, attention, awareness, and feelings of pleasure, libido, normal social behavior and sense of wellbeing.

PEA... More than Endogenous Amphetamine in our Brain
The Phenylethylamine Hypothesis of Depression stems from the observation that amphetamines increased energy and relieved depressive symptoms of depressive patients. Amphetamine is essentially phenylethylamine with an added methyl group. Studies show that PEA induces behavioral and electrophysiological effects similar to those of amphetamine. Unlike amphetamine, PEA is endogenous to the brain and does not develop tolerance or dependency, or produce any side effects.

The stimulant effects of amphetamines and PEA are attributed to the release of catecholamines (noradrenalin, dopamine). This is the basis for the catecholamine hypothesis of depression. However current research shows that PEA is significantly more effective than amphetamine in relieving depression and has therapeutic value in a wide range of neurological and behavioral disorders,

Endogenous Mesencephalic Enhancer and Transmitter Signal Amplifier
Starting around 1995, Dr. Joseph Knoll and his colleagues began presenting their evidence of PEA as an endogenous “mesencephalic enhancer”. There are enhancer-sensitive neurons in the brain work in a split-second on a high activity level due to endogenous enhancer substances. The mesencephalic enhancer PEA enhancers of the impulse propagation mediated release of catecholamines (dopamine, epinephrine) and serotonin in the brain.

PEA is a “Neuroamplifier” of transmitter signals. PEA enhances the electronic coupling in the synaptic gap junction of linked regions of cells for greater signal strength in the pulses of neurotransmitter release. PEA increases sing the signal-to-noise ratio for stronger signal firing. This means that PEA more efficiently couples the release of neurotransmitters to the electrical impulse that triggers their release. This turns up the volume level of catecholamine nerve activity for enhancing their overall effects causing a larger release of neurotransmitters in response to a given nerve signal. It’s like amplying the volume level of of neurotransmitter activity.

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PEA induces higher concentration, continuous strong release, and greater activity of dopamine (for motivational drive, feelings of pleasure and sense of wellbeing), norepinephrine (the brain’s stimulant for wakefulness, alertness, energy and attention) acetylcholine (for memory, learning, smartness and cognitive functions), and serotonin (for good moods and feelings, and impulse control).

It’s well known that catecholamines and serotonin in the brain play a crucial role in the control of mood. Major depression is associated with a deficiency in the activity of these systems, providing the rational for antidepressant effect of enhancer substances like PEA.

**Neuromodulator that alters Transporter Functions by binding TAAR1**

Studies conducted in the last five years, have focused on how PEA and other trace amines function as a neuromodulator and alter monoamine transporter function by binding with paired Trace Amine-Associated Receptors (TAAR). TAAR1 is a G protein coupled receptor that’s activated by PEA and certain monoamines and amphetamine-related psychostimulants.

The activation of TAAR1 by PEA significantly inhibits the uptake and induces efflux of its partner neurotransmitters- dopamine, norepinephrine, and serotonin. These actions by PEA increase the extracellular levels of these neurotransmitters by inhibiting their reuptake into the presynaptic cell. And this increases their available level to bind to the postsynaptic receptor.

Furthermore, PEA self-regulates transmitter activity to prevent over-excitation of under-stimulation transmitter signal strength and activity. Thus PEA acts as an homeostatic controller to maintain the neuronal activity of monoamine neurotransmitters within defined physiological limits. This makes PEA and other trace amines perfect candidates for the development of novel therapeutics for a wide range of human disorders. Their therapeutic potential is supported by numerous pharmaceutical companies conducting active trace amine research projects.

**The Therapeutic Use of PEA in Neurobehavioral Disorders**

According to this model, PEA may be therapeutically useful in any disorder associated with an alteration in the functioning of its partner neurotransmitters. In the case of PEA, it’s primarily the transmitter’s dopamine, norepinephrine, serotonin and acetylcholine. This gives PEA the ability to alleviate the symptoms of vast number neurological dysfunctions and behavioral disorders without addressing the underlying pathology of the disease.

Convincing evidence has been presented for using PEA in the treatment for a wide range of neurological dysfunctions and behavioral disorders. A current list with extensive references (under PEA Therapeutics in the Reference Section) includes:

- AFFECTIVE DISORDERS (depression, bipolar disorder)
- ATTENTION DEFICIT / HYPERACTIVITY DISORDER (very short attention span, impulsiveness, hyperactivity, distractibility)
- COGNITIVE DYSFUNCTION (brain fog, confusion forgetfulness, poor concentration, sluggish cognitive tempo slowed reaction times, diminished awareness)
- DRUG ABUSE & SUBSTANCE DEPENDENCE (alcoholism, nicotine dependence, addictions to methamphetamines, cocaine opioids &psychostimulants)
- ADDICTED BEHAVIOR (gambling, sexual addiction )
- EATING DISORDERS (obesity, anorexia)
PEA’s Antidepressant, Anti-Anxiety & Attention-Focusing Potential

There is clear, distinct difference in PEA’s effectiveness on catecholaminergic and serotonergic neurons. PEA is more potent in enhancing the stimulation-evoked release and reuptake of catecholamines especially dopamine when compared with serotonin. This indicates that PEAs neurmodulation in catecholaminergic and serotonergic neurons is not identical on the molecular level.

There is substantial evidence that PEA produces stronger actions as a NDRI (Norepinephrine-Dopamine Reuptake Inhibitor) than as an SSRI (Selective Serotonin Reuptake Inhibitors) Their combined actions indicate how PEA works as an antidepressant, anti-anxiety, anti-addiction and attention-focusing complement or alternative to standard treatments.

- PEA has actions of an NDRI such as Ritalin Wellbutrin, Zyban, etc.
- PEA has actions of an SSRI like Celexa, Orizac and Paxil, etc.

In terms of safety, PEA does produce the adverse reactions and side effects of the popular pharmaceutical NDRIs and SSRIs. It’s due to PEA’s self-regulating mechanisms of synaptic transport and receptor functioning, homeostatic control of neurotransmissions and intrinsic neuroprotective properties.

Treating Depression with PEA... An Early Case Study

It was discovered that the amount of PEA in the brains of depressed patients was less than that of normal individuals, and giving PEA orally to individuals suffering from depression reversed the depressive condition. In fact, most antidepressant drug treatments act by increasing the level of PEA in the brain.

In one study, PEA was shown to decrease the symptoms of depression in 60% the patients tested, the same outcome expected from taking an SSRI. The patients did not develop tolerance, and PEA remained effective over time. None of the side effects associated with conventional antidepressant drugs was experienced. About 60% showed immediate recovery in as little as a half an hour. Most patients did not gain weight. In fact many actually lost the weight they had gained on the conventional antidepressant therapy.
General References


PEA control of depression in 60% of depressed patients; the same percentage as major antidepressants like Prozac--but without adverse effects.


Reduction in PEA metabolism with depression in psychiatric patients


PEA as a Mesencephalic Enhancer and Neurotransmitter Signal Amplifier

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PEA, Trace Amines and TARR1

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PEA Therapeutics


These statements have not been evaluated by the Food and Drug Administration. This product is not intended to diagnose, treat, cure, or prevent any disease.