



## OVERVIEW

NuCalm™ is a revolutionary technology that naturally relaxes the body without drugs. Our technology improves dentistry by providing a unique, relaxed, and comfortable dental experience for every patient. It is safe, easy to use, and patients will not experience any side effects or required recuperation time. Developed by accomplished neuroscientists in Kerrville, TX, NuCalm has been used on over 10,000 dental patients across the U.S. and UK.

NuCalm is sophisticated psychobiology and neurobioinformatics applied in a simple clinical solution that naturally brings the brain wave function to the first stage of sleep (Alpha Stage 12 Hz to 8 Hz) without using narcotics or controlled substances. By mimicking the natural process of readying the body for sleep, NuCalm provides the same deep relaxation every person feels moments before they fall asleep. NuCalm is a cost-effective means to creating the ideal, relaxed dental patient.

### Anxiety

Anxiety is caused by a biological response to the stimulus of a threat, real or perceived. When a person is faced with a threat, the brain prepares the body by activating the 'fight or flight' system. Once the fight or flight adrenaline response is generated, the mind cannot rationalize itself or self-

regulate until after the threat is removed and time passes. The physiology of anxiety is characterized by cognitive, somatic, emotional, and behavioral components. These components combine to create feelings of fear, apprehension, and/or worry. Anxiety is often accompanied by physical sensations such as heart palpitations, nausea, chest pain, shortness of breath, stomach ache, cold and clammy feeling extremities, irritability, muscle tension, or headache.

### Impact of Anxiety in America

Generalized Anxiety Disorder (GAD) is the most common diagnosed mental illness in the U.S., affecting over 40 million adults and costing over \$42 Billion in annual healthcare expenditures. According to the Anxiety Disorders Association of America (ADAA), \$22.84 Billion of the annual costs are associated with the repeated use of healthcare services; people with anxiety disorders seek relief for symptoms that mimic physical illnesses. Anxiety is not always pathological or maladaptive and plays a very important function in relation to human survival. However, anxiety acutely affects most Americans when they have medical procedures ranging from dentistry to dialysis to chemotherapy to childbirth. An anxious body is more



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resistant to treatment and can compromise the effectiveness of the treatment. An anxious mind, in many cases, may avoid seeking treatment thus compromising good health and quality of life. With NuCalm, people can now get the healthcare they need without the anxiety commonly associated with medical treatment.

### Impact of Anxiety in the Dental Market

In the dental industry, anxiety is a profound problem that negatively impacts patient experiences. Humans are anthropologically conditioned to protect their mouth as a means to survival. Thus, dentistry can elicit an anxious response. In fact, nearly 60 million Americans avoid routine dentist visits due to anxiety over oral healthcare. Dental patient anxiety is caused by several subjective stimuli including fear of pain, fear of needle injections, fear that the injection/anesthesia won't work, fear of anesthetic side effects, sense of helplessness, and fear of embarrassment/shame in the cases of neglected oral healthcare. Anxiety is not a positive experience for patients or dentists, yet most Americans experience some level of anxiety regarding dentistry and this unmet need continues to demand a solution.

### NuCalm



NuCalm is a patent-pending, proprietary, technology that relaxes the body within minutes by bringing alert beta brain wave function down to the alpha range (first stage of sleep). NuCalm leverages the synergistic benefits of four sensory applications: chewable tablets (natural anxiolytic neurotransmitters), CES (FDA-cleared Cranial Electrotherapy Stimulation) to catalyze the effectiveness of neurotransmitters, neuroacoustic binaural beat software, and black-out glasses. NuCalm is unique because it creates deep relaxation without using narcotics or controlled substances, causes no side effects, and requires no recuperative time or supervision.

***NuCalm provides a better, safer alternative for patients and clinicians.***



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Before NuCalm, patients had two ways to cope with the anxiety induced by a healthcare procedure: chemical sedation or avoid the treatment. With NuCalm we can create a relaxed experience without doing any harm.

NuCalm organically entrains brain waves to a frequency that creates relaxation and calm. Beta brain waves (13 Hz-30 Hz) are associated with day-to-day wakefulness - mental activity consisting of cognitive, sensory and motor activities. High beta brain waves (23 Hz-40 Hz) are associated with fear and anxiety. NuCalm brings the patient's brain waves from beta or high beta to the alpha range (8 Hz-12 Hz). Alpha brain waves are associated with relaxation, meditation, and idleness. A patient with brain waves in the alpha range is physically unable to be anxious. NuCalm naturally entrains the brain to the alpha range, creating homeostasis, neuromuscular release, and relaxation.



The NuCalm system includes four main components:

- Proprietary chewable tablets containing neurotransmitters that counteract adrenaline
- FDA-cleared Cranial Electrotherapy Stimulation (CES) device
- Proprietary neuroacoustic software
- Black-out glasses

### Chewable Tablets

The NuCalm proprietary orthomolecular formula has been

developed over several years to maximize the body's natural relaxation



response with NuCalm. The proprietary formula is only available in the NuCalm system and includes structured nutrient-sourced building blocks that rapidly enter the brain and convert to powerful messengers that suppress anxiety and create relaxation. The primary ingredients include:

- **Gamma-Aminobutyric Acid (GABA)** - an inhibitory neurotransmitter that promotes a state of deep relaxation and calm
- **L-Theanine** - a free (non-protein) amino acid found almost exclusively in tea plants (*Camellia sinensis*). L-Theanine supports the formation of GABA.



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### GABA

GABA is a major inhibitory neurotransmitter that reduces the excitability of neurons. Over-stimulated or over-active neurons may lead to feelings of restlessness, irritability, and sleeplessness.

***GABA inhibits nerve cells from over-firing to promote feelings of calmness and stability.***

GABA is naturally produced from the amino acid glutamine and the sugar glucose. It is concentrated in the hypothalamus area of the brain and is known to play a role in healthy pituitary function, which helps maintain hormone synthesis, proper sleep cycles, and body temperature.

GABA is the only amino acid that can pass through the blood-brain barrier when administered orally. The GABA A and GABA B receptor sites are located in the same area as the brain receptor sites for benzodiazepines, barbiturates, and alcohol.

### L-Theanine

L-Theanine is an amino acid that has been shown to induce a general calming effect. The natural effects of L-Theanine include:

- Stimulating the production of alpha brain waves
- Protecting and restoring the brain
- Inducing deep states of relaxation

- Up-regulating GABA - increasing its clinical efficacy and relaxation effect

Studies show that L-Theanine plays a role in inducing the same calm and feeling of well-being as meditation, massage, or aromatherapy.

### Cranial Electrotherapy Stimulation (CES)

The Cranial Electrotherapy Stimulation device produces low amounts of electrical current



(close to the cell's own electrical values - micro current is less than 1,000,000th of an Amp). This easy-to-use device has been cleared by the FDA for the treatment of anxiety, depression, and insomnia. Research over the past 50 years indicates an increase in metabolism of neurotransmitters as evidenced by an increase in the metabolites of the neurochemicals. Other research points to a normalization and balance of the brain's neurochemistry by reestablishing optimal neurotransmitter levels. Low-level electrical current interacts with cell membranes in a manner that produces modifications in information transduction associated with classical second messenger pathways. Electrical



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engineering studies found that a small fraction of CES current actually reaches the thalamic area of the brain facilitating the release of neurotransmitters.

***CES studies show reduced rigidity in the central nervous system stimulation process and enhanced activity of the alpha-rhythm generating systems.***

Combining CES with precursor neurotransmitters causes a profound state of relaxation and anxiolysis. QEEG and EEG's indicate a brain wave shift occurring whereby the patient's brain activity slows down - from beta brain waves of high alertness and anxiety to alpha brain waves that are present during a relaxed, pre-sleep state.

### Neuroacoustic Software

The proprietary neuroacoustic software provided in the NuCalm system uses binaural beats and Frequency Following Response (FFR) that initiate a change in brain waves. According to extensive research, a scientifically validated neurophysiologic response is initiated when an auditory pacing signal is presented to the brain. We have developed significant advances in the design of binaural and monaural beat sound acoustics, which are overlaid with classical music and administered to the patient using an MP3 player and noise-dampening headphones.

The neuroacoustic brain entrainment software moves the patient's brain waves from the high beta brain wave frequencies associated with anxiety (23 Hz-40 Hz) to brain wave frequency patterns of alpha (primarily 8 Hz-12 Hz). These alpha brain waves are associated with deep relaxation and calmness.



Binaural beats are auditory brainstem responses, which originate in the superior olivary nucleus of each hemisphere. They result from the interaction of two different auditory impulses, originating in opposite ears, registering below 1,000 Hz and which differ in frequency between one and 30 Hz (Oster, 1973). For example, if a pure tone of 500 Hz is presented to the right ear and a pure tone of 510 Hz is presented simultaneously to the left ear, an amplitude modulated standing wave of 10 Hz, the difference between the two tones, is experienced as the two wave forms mesh in and out of phase within the superior olivary nuclei. This binaural beat is not heard in the ordinary sense of the word (the human range of hearing is from 20-20,000 Hz). It is



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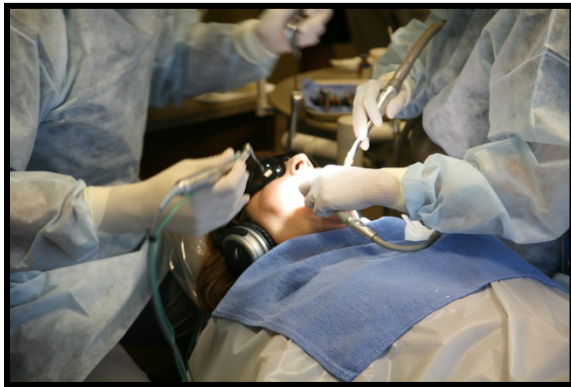
perceived as an auditory beat, and theoretically can be used to entrain specific neural rhythms through the frequency following response, thus modulating the brain wave frequency in the case of NuCalm to 8 Hz and 12 Hz.

### Black-Out Glasses

The black-out glasses or dark glasses used in the NuCalm system block light so patients are not stimulated through the visual cortex and can maintain the relaxed NuCalm brain state.



### The NuCalm Experience



The NuCalm system combines several scientific and technological advancements that have been used to treat anxiety as standalone solutions.

The clinical procedure takes approximately 3 minutes for patient setup and approximately 3 additional minutes before the patient experiences deep relaxation.

The NuCalm neuroacoustic software paces the patient's brain waves between 8 Hz and 12 Hz throughout the procedure. Once the dental procedure is completed, the NuCalm components are removed and the patient will experience a relaxed, refreshed feeling with no side effects and no recuperative time needed.

To date, NuCalm has been used on over 10,000 dental patients across the U.S. and UK without a single reported adverse effect.

***Over 94% of NuCalm patients have said they would use NuCalm again. Over 98% would recommend NuCalm to their friends and family.***

To facilitate easy implementation, clinical protocols have been developed, refined, and documented into "best practices" training tools for dentists and their teams. NuCalm can alleviate negative patient experiences that are caused by fear and anxiety and can change the perceptions Americans have about going to the dentist. Imagine the impact NuCalm can have on the dental industry and the overall oral health of the American population if dentists can provide relaxing and rejuvenating dental experiences.



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### NuCalm Benefits

- Causes effective, safe anxiolysis where a relaxed state is induced and maintained for an entire healthcare procedure
- Minimizes risk to patient and clinician during a procedure - patient's motor responses are significantly reduced
- Promotes efficiencies for clinician because patients are relaxed and still (no startle responses and sudden patient movements; reduced gag reflexes)
- Is less intrusive than sedation techniques - does not chemically compromise the central nervous system or cognitively impair the patient's mind
- Patient's body is more receptive to treatment (natural resistance mechanisms are dulled)
- Patients can come and go on their own (there are no side effects, no recovery time or supervision needed, and no impairments)
- Patient's post-treatment experience is a feeling of rejuvenation and relief (NuCalm helps the brain achieve cellular homeostasis which provides a neuromuscular release of any bodily tension and a sense of balance)
- Increased positive patient experiences - eventually will recondition patients to associate healthcare treatment with relaxation and rejuvenation

### NuCalm Impact

- Increased positive patient experiences
  - Patients will appreciate the change from their old experiences
  - Increased patient satisfaction
  - Increased patient referrals
- Dentistry without compromise - increased procedural efficiencies by working on quiet, still patients
- Less stress - anxious patients create stressful work environments; when patients are relaxed, clinicians and team members are relaxed
- The dental team does not need to act as part-time anesthesiologists, monitoring their patient's vital signs
- Higher percentage of case acceptance; less patient fear and less anxiety = less barriers to "yes" for treatment and at-home oral health compliance; patients will schedule additional appointments and keep them
- Activate patients that have neglected their oral healthcare due to fear/anxiety (~60 Million Americans)