Docket #: S22-075

Therapeutic Device Utilizing Electromagnetic Radiation with Oscillating Polarization State

Stanford researchers developed a device that emits electromagnetic radiation that oscillates between at least first and second distinct polarization states. Photobiomodulation (PBM) (also known as light therapy) has been used as a treatment modality for diseases such as Alzheimer's disease (AD), insomnia, ADHD and dementia, and has been shown to be effective in improving patient recovery after surgical procedures. Many PBM devices utilize light sources that flicker at particular frequencies (that is, they oscillate between an on and off state at that frequency). For example, light sources that flicker at 40 Hz have shown particular promise in treating AD. A few PBM devices also utilize polarized light sources, and evidence exists that polarized light is superior to randomly polarized light sources in some applications (such as, for example, improved wound healing and accelerated recovery from protracted illness). This invention combines the benefits of a polarized light source with those of an oscillating light source. Moreover, since the device utilizes multiple polarization states, it can be used to address effects that are specific to each selected polarization state (e.g., due to stereospecific absorption). Moreover, because the device is in an "always on" state (because oscillation occurs between two different polarization states, rather than between on and off states), the device may significantly shorten the duration of time-dependent treatments that are not polarization-specific. Finally, because the device is in an "always on" state and oscillations in polarization states are not readily discernible to the human eye, the device overcomes the discomfort and deleterious effects sometimes associated with visible flicker.

Stage of Development
Proof of concept in in mouse models

Applications

- Light therapy for treatment of various diseases, such as Alzheimer's, insomnia, ADHD, dementia

Advantages

- Provides all of the benefits of conventional PBM devices and polarized light sources
- Provides benefits unique to certain polarizations of light
- Shortens treatment times
- Overcomes issues with visible flicker

Patents

- Published Application: 20230321458

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