

PRODUCT

Method and apparatus for electronically stimulating the sphenopalatine ganglion to control the permeability of the blood brain barrier (BBB).

INDICATIONS

Targeted drug delivery, Brain tumors, central nervous system diseases, Alzheimer's, Parkinson's, CNS infections, autoimmune

VALUE PROPOSITION

- Opportunities for treatments previously considered challenging, due to BBB impermeability.
- Precision of drug delivery
- Minimized systemic exposure and reduced adverse side effects.
- Versatility: adaptable for various drugs/doses

DEVELOPMENT STAGE

Establishing Proof of Concept

INTELLECTUAL PROPERTY

Patent Pending

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Closed Loop Drug Delivery System for Stimulated Blood Brain Barrier Modulation

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PROBLEM

The blood brain barrier (BBB) represents a significant obstacle to the delivery of therapeutic agents to the central nervous system. Techniques to transiently increase the permeability of the BBB have been sought for various clinical applications. There has been a need for a system that can provide precise and controlled modulation of BBB permeability in conjunction with drug delivery.

SOLUTION

An innovative closed loop drug delivery system has been developed at Cleveland Clinic. This system is comprised of a sphenopalatine ganglion stimulation implant and drug delivery pump. The implant is equipped to stimulate the sphenopalatine ganglion. When stimulated at frequencies less than 100 Hz, the BBB is rendered permeable, allowing drugs to pass. At frequencies greater than 100 Hz, the BBB reverts to its impermeable state. The drug delivery pump can be intravenous, intraarterial, or intrathecal. When the BBB is rendered permeable by the sphenopalatine stimulation implant, this pump becomes activated, delivering therapeutic agents. Postdelivery, it sends a signal to the implant to restore BBB's impermeable state.

