Researchers at the University of South Florida have developed a novel catheter system and method of use, to effectively deliver therapeutic agents to specific regions of the central nervous system of animals. This tool will greatly enhance the delivery of treatments in animal models and will also serve as a platform for the development of targeted drug delivery tools for the treatment of similar disorders in humans.

The tight regulation of the blood brain barrier often restricts the transport of various drugs and therapeutic agents between the bloodstream and neural tissue, which increases the potential for systemic adverse side effects. Therefore, direct drug delivery mechanisms and devices are desired to reduce these adverse side effects and also diminish the invasiveness of neurosurgery. Various Intracranial catheters have been developed to address this need. However, there is still a significant need for improvements in the accuracy of insertion of such devices. There is also a need to minimize the number of instruments which penetrate the brain and also the number of times a single instrument must penetrate the brain tissue.

To address these needs, our inventors have developed a catheter assembly which allows for precise insertion of drug delivery ports in the brain of animals, while avoiding extensive trauma or scarring of the brain tissue or skull. The catheter is strongly affixed to multiple pumps which enables the simultaneous infusion of more than one compound to different regions of the brain. These pumps can be safely and easily changed while catheters stay in place, which is especially useful if studies are for an extended period of time, up to several months. The catheter may also be bifurcated for multiple dosing regimen. The device can be completely removed without permanent damage to the animal which is an advantage over similar devices, which often result in permanent motor dysfunction after removal. The design of the device ensures that animals will not have access to the tubing where it can be chewed, or wherein they may become entangled.

ADVANTAGES:

- Specific and targeted delivery of drugs to the brain
- Simultaneous infusion of multiple therapeutic agents
- Accurate insertion of catheter
- Minimal scarring or trauma to brain
- Multiple dosing regimen

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