Microdialysis Probe for Accessing Tissue in-vivo

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Technology description

Summary

Available for licensing and commercial development is a microdialysis probe. This device permits in-vivo measurement of bioavailable substances (e.g., cytokines, growth factors, neuropeptides, inflammatory mediators, etc.) at picogram levels of concentration directly from soft tissue and organ systems. The probe may also serve as an in-situ drug delivery vehicle of micro doses of medication to specific anatomical sites by slow diffusion. It also permits measurement of efficacy of drug delivery, whether given orally, systemically or topically, at the local tissue level. It can be utilized in a variety of patient populations and conditions. For example, the probe can be used to monitor the local biochemical milieu in soft tissue and organ systems to provide insights into the pathophysiology of musculoskeletal, neuromuscular, rheumatic, gastrointestinal, renal, cardiovascular and endocrinologic diseases, cancers, dermatological conditions, and pediatric disorders, especially in premature newborns.

The probe is made from a small-bore (32 gauge) needle, whose probe surface has been fashioned to permit near trauma-less entry, containing both a fluid delivery and recovery tube within the bore. A molecular exchange membrane is positioned about 200 microns from the tip. Fluid flows across the membrane removing diffused molecules to a collection device. The rounded tip of the needle is designed to cause minimal tissue damage while allowing investigations to be performed on local tissue fluids. Additionally, this device allows simultaneous delivery of small concentrations of drug. In summary, this unique apparatus provides a minimally invasive means for sampling biological fluids in any human or animal organ or tissue and for in-situ drug-delivery, in continuous or incremental dosing, of extremely small doses.
Market:
Drug discovery
Tissue/fluid sampling
Pain management

Application area

Measurement of bioavailable substances in organs and soft tissues

Localized drug delivery vehicle

Measurement of tissue drug levels

Institution

NIH - National Institutes of Health

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