Editorial
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Editorial: Treating Spinal Cord Injuries Using Nanoparticles

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Editorial

Nanoparticles are tiny particles which can be used to distribute medicines to places that are otherwise inaccessible. The spinal cord, a part of the central nervous system, has been the subject of nanoparticle therapy and can be difficult to treat.

During the past decade, nanoparticles have been studied for possible use in the treatment of inflammation and injury. The main advantage that separates nanoparticles from previous therapies is the more localised effect that can be achieved compared to systemic injections or generalised treatments. While nanoparticles can target specific sites, their administration can be more general, such as via in Injection intravenously.

This will allow for the ongoing treatment of drug-using accidents that otherwise may have toxic effects restricting their use. In addition, some encapsulation techniques make it possible to release drugs sequentially over time, thus reducing the number of injections required.

Transporting drugs

Spinal cord injury can lead to paralysis, harmful infections, and death. Injuries can be difficult to treat since there is an inflammatory reaction to damage and current medications can have significant side effects that are likely to be related to the toxicity of the drugs to other organs. Through delivering the drugs directly to the injury site rather than injecting the drugs systemically, nanoparticles may help resolve such barriers.

Conversing with a specialist, as even these prescriptions may have serious results whenever taken mistakenly. Medical procedure is a final hotel therapy and is seldom required for back torment.

Nanoparticles have been studied to directly administer methylprednisolone to damaged spinal cords, increasing the effectiveness of the treatment and reducing adverse effects. In addition, at about 1/20th of the systematically administered dose, nanoparticle delivery allows for the use of a lower dose.

This can be avoided by reducing the blood flow of weakened blood vessels, which can be accomplished with fibroblast growth factor 2 (FGF2). Typically, since FGF2 is not capable of breaching the blood-spinal cord barrier, FGF2 cannot be administered systemically. In rats, FGF2 was successfully encapsulated in hydrogel PLGA nanoparticles and administered to injury sites in the spinal cord and resulted in improved blood vessel density after injury.

Affects

Nanoparticles may be used to affect the immune system by pushing immune cells across the body, in addition to distributing drugs. PLG-based nanoparticles with a negative zeta potential are assumed to bind to circulating immune cells, altering their spleen flow, thus indirectly reducing the immune response to the inflamed spinal cord region and providing a therapeutic advantage.

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