Repeate on-demand drug delivery system triggered by ultrasound

Technology #m10-065

Drug delivery is a complex and dynamic process. The ability to rapidly deliver drugs to specific areas has been a long sought-after clinical advance. This technology allows for the uniform embedding of drug-containing liposomes into hydrogel matrices. Following injection of the hydrogel, drug release can be reliably triggered by exposing the target tissue to ultrasound pulses. As such, this process allows for repeatable and reliable site-directed drug delivery.

Reliable, repeatable, on-site drug release via ultrasound

Liposomes are commonly used to encapsulate and deliver pharmaceuticals to target cells. Embedding liposomes in a hydrogel matrix containing microbubbles ensures that the liposomes and microbubbles remain in close proximity after injection. The microbubbles amplify the release of liposome contents when exposed to ultrasound. This process allows for increased drug-delivery precision while obviating the need for surgical implantation. By reducing the need for surgical intervention while increasing the efficiency of delivering, this process could allow for cheaper and more effective drug delivery in complex cases.

Lead Inventor:

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Applications:

• On-demand repeated drug delivery of antibiotics, analgesics, and antineoplastics.
• Can be used to treat sleep and psychological disorders with drugs whose efficacy depends on precisely controlled release.

Advantages:

• Injectable system obviates need for surgical implantation of timed drug release systems.
• Uses microbubbles to enhance the triggering effect of ultrasound.
• Increases difference between basal and peak release rates.
Patent Information:
Tech Ventures Reference: IR M10-065

Related Publications:

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