PURDUE INNOVATES | Office of Technology Commercialization

Long Acting Buprenorphine Implants

Injectable biodegradable implants releasing therapeutic drug levels for 3–6 months for opioid use disorder treatment.

Opioid use disorder (OUD) has reached epidemic levels in the United States, highlighting the urgent need for accessible treatment options. Opioid agonist therapy, including medications such as buprenorphine and methadone, has proven effective in reducing mortality rates associated with OUD. Researchers at Purdue University have developed an innovative long-acting injectable formulation that contains up to 70% buprenorphine. This formulation combines the drug with biodegradable polymers that are mechanically compacted to create a highly dense solid matrix. This method ensures a prolonged drug release that lasts over three months after a single administration. This technology holds considerable promise for advancing long-acting injectable drug delivery systems, which can significantly enhance patients' compliance and convenience.

Technology Validation:

The in vivo pharmacokinetic profiles observed in rodent and canine models have demonstrated sustained maintenance of the effective buprenorphine concentration in the blood for periods far exceeding three months. This unique formulation is capable of delivering buprenorphine and other drugs for durations ranging from three to six months.

Advantages:

-Long acting

-Injectable

Applications:

-Pharmaceutical companies

-Drug release

-Drug formulation

Technology ID

2024-OTTE-70416

Category

Pharmaceuticals/Biopharmaceuti
Pharmaceuticals/Pharmaceutical
Packaging & Delivery Systems
Pharmaceuticals/Computational
Drug Delivery & Nanomedicine

Authors

Andrew D Otte

Further information

Patrick Finnerty
pwfinnerty@prf.org

View online

TRL: 3

Intellectual Property:

Provisional-Patent, 2022-12-25, United States

Utility Patent, 2023-12-13, United States

Provisional-Patent, 2025-03-28, United States

CIP-Gov. Funding, 2025-06-26, United States

Keywords: Buprenorphine Implants, Chemistry and Chemical Analysis, Long Acting, Pharmaceuticals