

Long-acting injectable *in-situ* forming implant of EP055 for non-hormonal male contraception

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Globally, nearly half of all pregnancies are unintended, displaying an immense need for the expansion of contraceptive options. Although many contraceptive drugs and devices for women exist, there is reproductive inequity as options for male contraception are limited to surgical vasectomy and condom use. To date, there are no long-acting, reversible contraceptive options for men. EP055 is a small molecule that targets epididymal protease inhibitor (EPPIN), a sperm surface protein, and has shown potential as a non-hormonal male contraceptive following rapid, reversible inhibition of sperm motility in rhesus macaques (Eppin Pharma). However, EP055 has a short plasma half-life, which proves to be a challenge in drug delivery development. To remedy this issue, we present a long-acting delivery system: an injectable and biodegradable *in-situ* forming implant (ISFI) that sustains EP055 release for 30 days *in vitro*. Since EP055 has hydrophilic properties, we hypothesized that incorporation of the hydrophobic solvent benzyl benzoate into ISFI formulations would reduce burst release and increase release duration. This resulted in sustained release of EP055 for over 30 days *in vitro*. The successful continued release of EP055 from an ISFI proves its potential as a long-acting, reversible, non-hormonal male contraceptive.