Tech Session 2: Nanomedicine and Nanoscale Delivery

JOEL HELLRUP

CRS 2022 Annual Meeting & Expo

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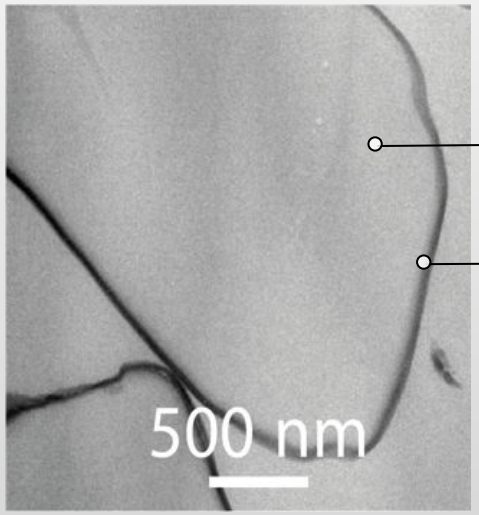
Advanced Delivery Science

PharmaShell® – The high drug load delivery system enabling the next generation long-acting injectables through atomic layer precision



TEM image of PharmaShell® coated API particle

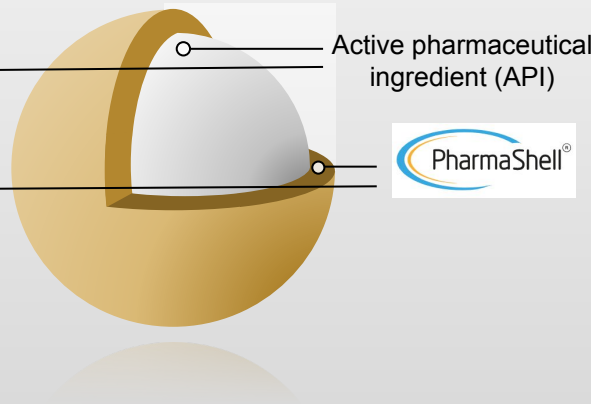
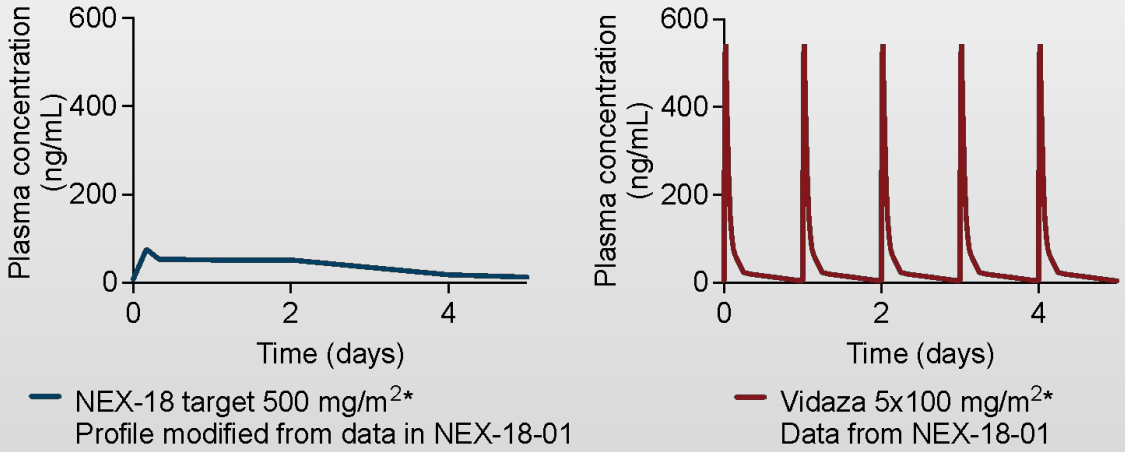


Illustration of PharmaShell®'s nanometer thick coatings



Concept data illustrating the avoidance of high and low plasma concentrations by using PharmaShell®

- Drug delivery system encasing active substance microparticles with thin coatings (10—50 nm) of slow-dissolving inorganic oxides
- System based on Atomic Layer Deposition (ALD) technology, enabling Nanexa to control the thickness of the drug's shell with high precision and determine the rate of release of the drug in advance

- Immediate release formulations are converted into long-acting injectables with enhanced properties
- Drug concentrations are kept within the therapeutic window to achieve the maximum benefit

PharmaShell® – Customized control enabling key benefits

- **Versatility** – applicable on a wide range of API characteristics
  - Small molecules
  - Biologics – peptides and proteins, etc
- **Customised** depot length
  - weeks, months, or even longer
- **Controlled** drug release, minimises side effects, and enables:
  - Minimize and control initial drug release
- **Protects** drug substance in-situ
  - Dense coating prevents hydrolysis or enzymatic cleavage
- **High** drug loads (up to 90%), enabling:
  - Minimised injection volumes
- **Flexibility** in respect of administration site
  - Subcutaneous or intramuscular administration for systemic exposure
  - Local administration, e.g. intratumorally, for local effect

For more information on PharmaShell technology visit:

- Tech Session 3: New Technology for Drug Delivery, *PharmaShell®–The high drug load delivery system enabling the next generation long-acting injectables through atomic layer precision*, David Westberg, Thursday 11 AM–1 PM, #520 C/F
- Tech Session 4: New Developments in Characterization and Process Scale-up, *Terminal sterilization of controlled release coated azacitidine using gamma irradiation*, Joel Hellrup, Thursday 3 PM–5 PM, #520 B/E
- Poster #280: *Prolonged-release coating working as a moisture barrier preventing in situ hydrolysis of azacitidine after subcutaneous administration*, Hellrup et al
- Poster #281: *A pharmacokinetic proof of principle of a long-acting injectable formulation of azacitidine*, Hellrup et al

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