

What is being treated where?

- Affects preferred route of delivery
- Inhaled drug delivery
 - Expensive to develop
 - Device adds to prescription cost
 - Multiple inhalers not popular with patients
 - Cannot be used with coloured drugs or those with unpleasant taste or effects on taste perception
 - Can also change saliva colour
 - Not constrained by Lipinski rules
- Oral drug delivery
 - Constrained by Lipinski rules
 - 'Rule of 5' (limits type of molecule you can design)
 - Greater off-target vulnerabilities
 - Compounds need to have ultraclean toxicology

Inhaled Therapy

- To non-experts an easy, fast, cheap option
- In reality inhaled therapy is difficult
 - Oral DMPK hurdles become challenges to a) bioavailability, have acceptable physical form, potency and solubility etc
 - However, Lipinski rules can sometimes be ignored
 - So, high PPB, FPM and poor bioavailability may be virtuous!
 - Potency must be high because device needs to contain many doses
 - For once daily dosing drugs and/or their effects must persist. This may be challenging for stability and selectivity reasons

Pharmaceutical profiling

- Inhaled drug development has uncommon requirements
 - Pharmaceutical profile of compounds is an important decision tool in discovery
- Profiling mitigates later risks
 - Insures against unpredictable slower developability
- Profiling gives physical properties early emphasis
 - Crystallinity, solubility, low hygroscopicity
 - Thermal behaviour (Thermal stability)
 - Particle behaviour
 - Stability with likely excipients

Compounds lacking appropriate physical properties are not developable assets for inhalation from DPI devices