# Why Formulation Is Critical to the Success of Next Generation Medicines



SAN DIEGO , CA, UNITED STATES, September 24, 2026 / EINPresswire.com/ -- Formulation helps drug developers address the practical barriers between a molecule and a medicine: how it dissolves, remains stable, and reaches the body in a usable form. WuXi AppTec brings this work together with chemistry and manufacturing, supporting development from the first formulation studies through late-stage supply.

For complex molecules, these decisions have immediate consequences. Poor absorption can hold back an oral drug candidate even when it acts on its intended target. For oligonucleotides, delivery involves protecting the active material and reaching the cells or tissues where it is needed. The formulation approach follows the molecule's particular challenge.

Start With the Properties That Shape the Formulation

WuXi AppTec uses preformulation studies to establish which physical forms and formulation approaches suit a candidate. The work examines solubility, stability, and compatibility with excipients, providing evidence for selecting molecules and preparing them for preclinical studies.

These measurements answer practical questions. How readily does the compound dissolve? Does it remain stable in solution and as a solid? How does it behave when combined with other ingredients? The results guide formulations for pharmacokinetic, pharmacodynamic, and toxicology studies, and inform the strategy for clinical development. WuXi STA's preformulation services cover conventional small molecules as well as modalities such as targeted protein degraders, peptides, and oligonucleotides.

Match the Delivery Approach to the Molecule

WuXi AppTec selects delivery technologies through formulation screening. For compounds that dissolve poorly in water, the options include spray dried dispersion, hot melt extrusion,

nanosuspensions, and lipid formulations. Spray dried dispersion distributes the drug in an amorphous form within a polymer matrix to improve dissolution.
In one project, a molecule weighing more than 1,000 daltons had poor water solubility and an oral absorption rate below 1%. The team evaluated delivery approaches, then refined the spray drying formulation and process. Bioavailability exceeded 30%, allowing further clinical development.
Oligonucleotide delivery calls for a different approach. WuXi STA's lipid nanoparticle platform combines formulation and process development with drug substance manufacturing and analytical support. Lipid nanoparticles provide protection against serum nucleases and support delivery to specific cells or tissues. The platform also includes synthesis and manufacturing of oligonucleotides and functional lipids.

## Develop the Chemistry and Dosage Form Together

WuXi AppTec runs chemistry and formulation work in parallel to address production and oral exposure within the same development program. A project involving a targeted protein degrader brought process chemists, biocatalysis specialists, crystallization scientists, and formulation scientists together to prepare material for a first human study.
The original synthesis required 24 steps and yielded 0.3%. The team shortened the route to 16 steps and replaced palladium catalysts with biocatalysts in two steps. Alongside this work, spray dried dispersion optimization increased the tablet's oral bioavailability by approximately 30 times. WuXi STA delivered the study material within 12 months, two months ahead of the planned schedule.

## Carry the Formulation Into Clinical Production

WuXi AppTec supports the transition to clinical supply with spray drying equipment spanning laboratory development and production. The platform accommodates several dosage forms, including tablets, capsules, powders, and granules.
In one Phase III supply project, WuXi STA moved a spray drying process from the PSD-1 system to the larger PSD-3 system in three months and delivered 1,400 kilograms of dispersion intermediate. The work took formulation beyond laboratory preparation to the quantities needed for clinical trials.
Across these stages, formulation data guide the next development step. Early studies establish the molecule's properties, screening identifies a delivery approach, and process development prepares that approach for clinical production. WuXi AppTec connects these activities within its development and manufacturing services.

## Key Takeaways

- Preformulation studies guide candidate selection and the preparation of formulations for preclinical and clinical development.
- WuXi AppTec evaluates delivery approaches against the needs of each molecule, including spray dried dispersion for poor solubility and lipid nanoparticles for oligonucleotide delivery.
- Parallel chemistry and formulation work supported early delivery of key material in a PROTAC project.

WuXi STA has scaled spray dried dispersion production to supply client’s late-stage programs.

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