

Clinical Trial In Progress

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782-B FID-007: NANOENCAPSULATED PACLITAXEL DERIVED FROM A NOVEL NANO-DRUG DELIVERY PLATFORM

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Background Fulgent has developed a novel, polymer-based nano-encapsulating drug delivery platform providing unique attributes including completely amorphous formulations with improved solubility as well as enhanced absorption, pharmacokinetic (PK) profiles, safety, and efficacy. This technology is broadly applicable to both IV and oral drug delivery formulations – potentially shortening the development timeline. Importantly, this technology represents a simple ‘Plug and Play’ platform that can enable the development of multiple drug assets using the same polymer excipient. Moreover, it has been demonstrated to be safe in humans as exemplified by the acceptance of the drug master file (DMF#36513) by the FDA in 2020. As an example, this technology has been utilized to develop FID-007 (FID), a novel nanoparticle paclitaxel formulation of paclitaxel encapsulated in a polyethyloxazoline (PEOX) polymer excipient. The PEOX nanoparticle preferentially delivers paclitaxel to the tumor through the leaky hyperpermeable vasculature. In xenograft studies, FID reduced or limited tumor growth in multiple tumor types including lung, gastric, breast, pancreatic, and ovarian.

Methods The Phase I clinical study evaluated the safety, PK, and efficacy of FID in patients with advanced solid tumors. The primary objective was to determine the MTD and RP2D. Patients received FID in doses between 15 mg/m² and 160 mg/m² using a standard 3+3 dose escalation design administered IV on Days 1, 8, and 15 of a 28-day cycle.

Results were evaluable for response by RECIST 1.1 with a PR rate of 18% (PR in pancreatic, biliary tract and NSCLC) and There was no paclitaxel accumulation after weekly dosing, and the t_{1/2} is between 18–26 hours. All grade treatment related adverse events (TRAEs) in ≥ 25% of pts were alopecia (53%), rash (40%), pruritus (40%), fatigue (38%), anorexia (30%), nausea (30%), white blood cell decreased (28%), anemia (25%), and dysgeusia (25%).

Conclusions FID has a manageable safety profile with MTD at 160 mg/m² and RP2D at 125 mg/m². PK is linear, dose proportional and comparable to that of nab-paclitaxel. Preliminary evidence of anti-tumor activity in 40 heavily pre-treated patients across various tumor types was demonstrated (ORR = 18%). There were no high-grade neuropathy adverse events as often seen with other taxane drugs. Clinical trial information: NCT03537690. Taken together, this example demonstrates the proof of concept for PEOX polymer based nano-drug delivery platform which can be broadly applied to other poorly water-soluble drugs through a simple ‘Plug & Play’ approach.

Trial Registration NCT03537690

Ethics Approval Under the USC identifier: 0C-18-2, as well as under the Clinical Trial Registration Number, NCT03537690, all studies obtained ethics approval in accordance with USC identifier: 0C-18-2 and Clinical Trial Registration Number NCT03537690. Further information can be provided upon request.

Consent Under the USC identifier: 0C-18-2, no sensitive or identifiable information (if applicable) is presented. Please see USC identifier: 0C-18-2 for further information.