SIGNPATH PHARMA INC

OVERVIEW

- *SignPath Pharma is a clinical stage biotechnology company. It focuses on creating heart safe versions of drugs which cause cardiotoxicity.*

- *SignPath's proprietary technology provides a solution to the most serious drug safety issue in the world (cardiac safety.)*

PROBLEM: DRUG INDUCED CARDIAC SIDE EFFECTS

- ***Arrhythmia caused by drugs:***
  - **Leading cause of failure at every stage of drug development**
  - Over 150 FDA approved drugs with this problem, including anti-cancer agents, antibiotics, antipsychotics, antihistamines and other drugs. Many of these drugs are dose limited by cardiac safety.
  - Numerous pipeline drugs are stalled due to cardiac toxicities. Estimated that about 30% of drugs in development fail due to cardiac safety.

- ***Cardiomyopathy caused by cancer chemotherapy:***
  - Cardiac toxicity that can permanently damage the heart muscle and damage to other organs
  - Prevents proven effective chemotherapy treatments from continued use
  - Cardiomyopathy leads to limited cumulative dose or temporary cessation of chemotherapy for many patients.

CARDIAC ANSWER: SPP4040

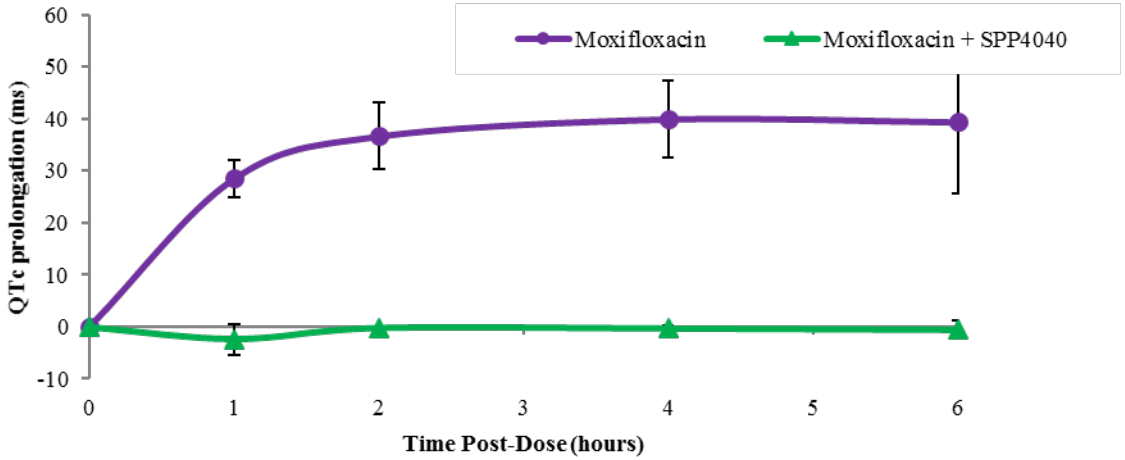
- ***SPP4040 has prevented arrhythmia more than 35 well known problem drugs***
- ***There is a 90% correlation between the animal models and human results for drugs impacting QT interval. Scientific risk is low.***
- ***SPP4040 has shown protection against cardiotoxicity with chemotherapy regimens that otherwise result in significant cardiomyopathy.***
- ***SPP4040 has been through numerous development iterations to achieve:***
  - Oral administration
  - Non-toxic even at high dosage (chronic dosing at 800x clinical dose)
  - Does not reduce or impact efficacy or PK of target drug
  - Effective within minutes
  - 6 to 8 hour effectiveness after single dose
  - 100mg dosage for adult male. This will allow co-formulation with target drugs

CorreQT™ Technology Eliminates Arrhythmia

➢**SPP4040**

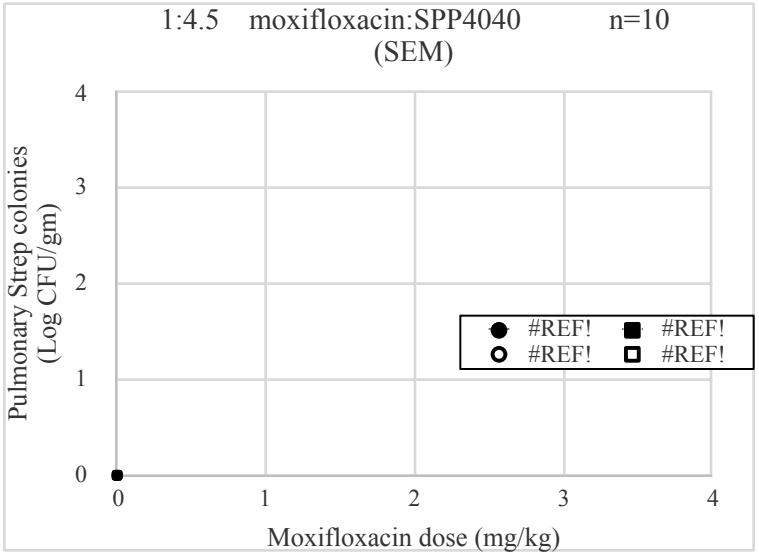
- has demonstrated amelioration of QT prolongation in more than 35 different drugs, of various classes.
- does not negatively affect the beneficial efficacy of the QT prolonging drug target.
- does not negatively affect the PK of the QT prolonging drug target.
- activity is independent of mechanism of the QT prolonging drug target.

➢**SPP4040** efficacy in Rabbits:

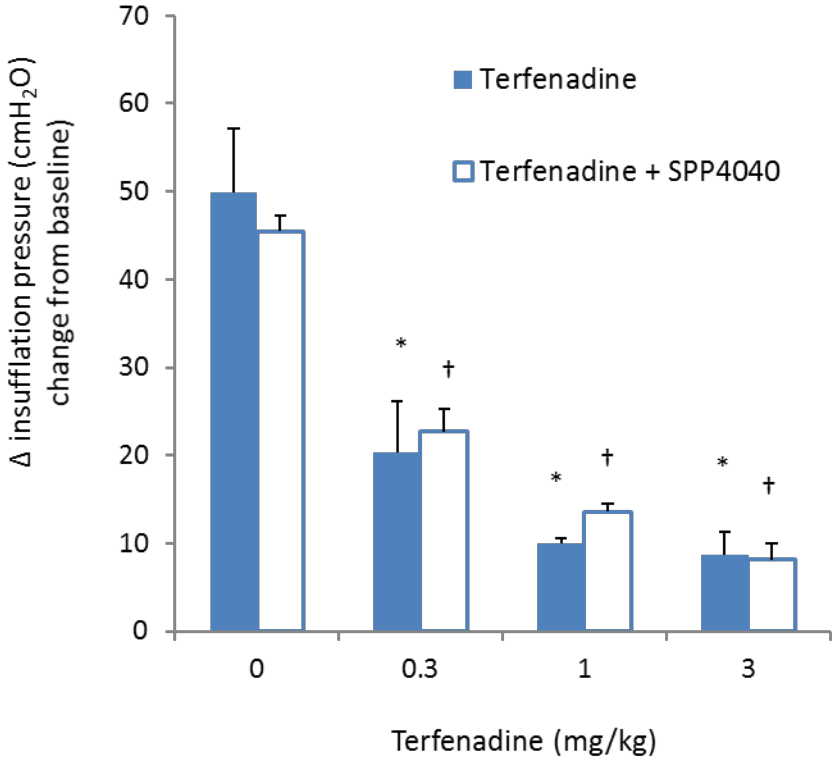


CorreQT™ Technology Does Not Interfere With Efficacy of Target Compound

SPP4040 does not inhibit Moxifloxacin efficacy in mice



SPP4040 does not inhibit Terfenadine efficacy in guinea pig



CorreQT™ Platform Technology

- ***CorreQT*™ Technology Prevents Chemotherapy Cardiac Damage ("Cardiomyopathy".)**

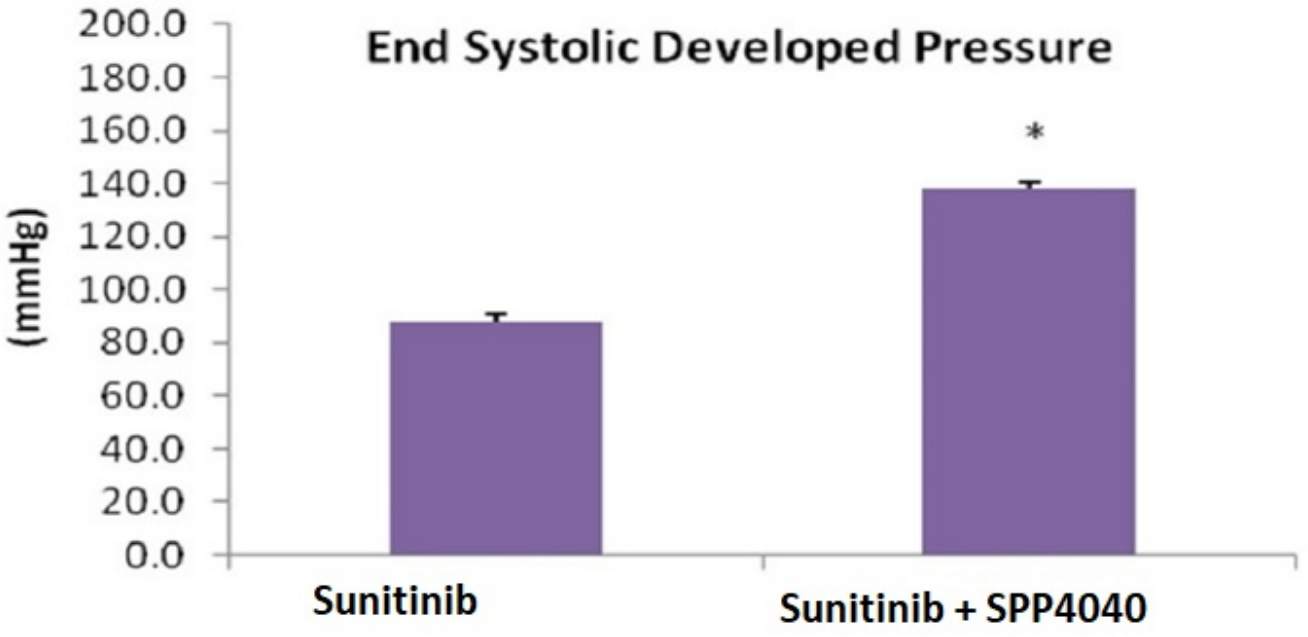
➢ Chemotherapy can cause cardiotoxicity, and recent studies have shown that the incidence of heart damage is much greater than previously thought. Cancer survivors are at risk for life-long impaired heart function or heart failure. Administration of many cancer drugs is limited by cardiotoxicity.

➢ **SPP4040:**

- ❑ is a non-toxic, orally administered drug developed by SignPath which protects the heart muscle from damage caused by chemotherapy agents.
- ❑ does not interfere with chemotherapy anti cancer effect**.**
- ❑ makes chemotherapy drugs safer by mitigating the cardiac damage that accompanies chemotherapy.

CorreQT™ Technology Prevents Heart Damage

In animal studies, guinea pigs who were administered chemotherapy showed significantly greater heart function when the chemotherapy was co-administered with Signpath's CorreQT adjuvant.



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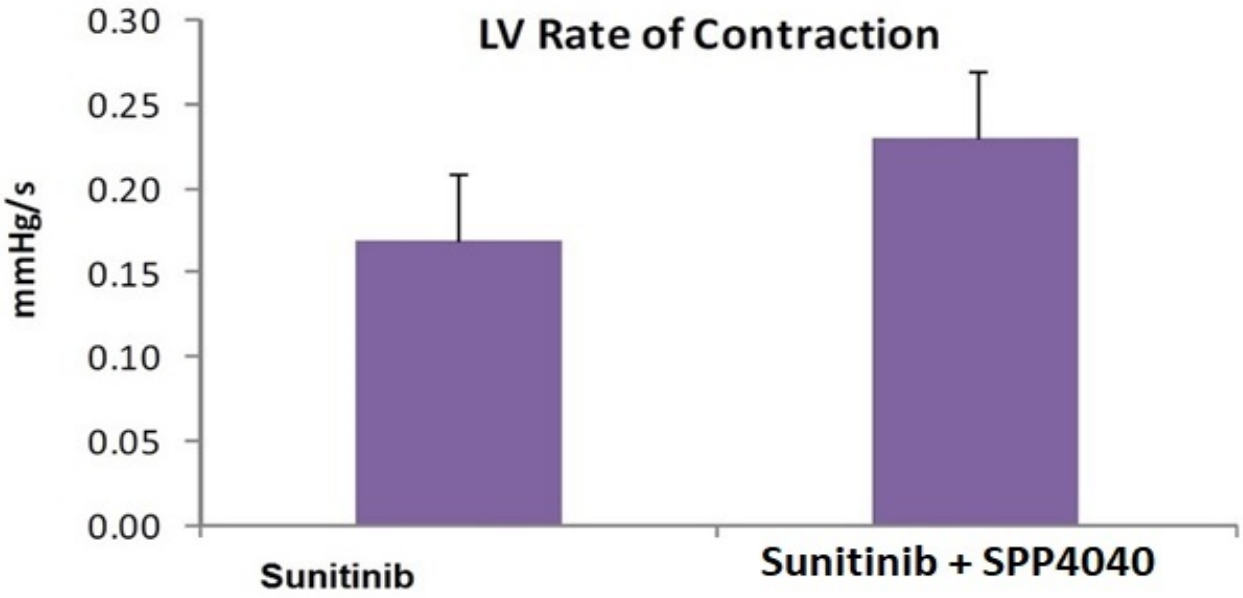
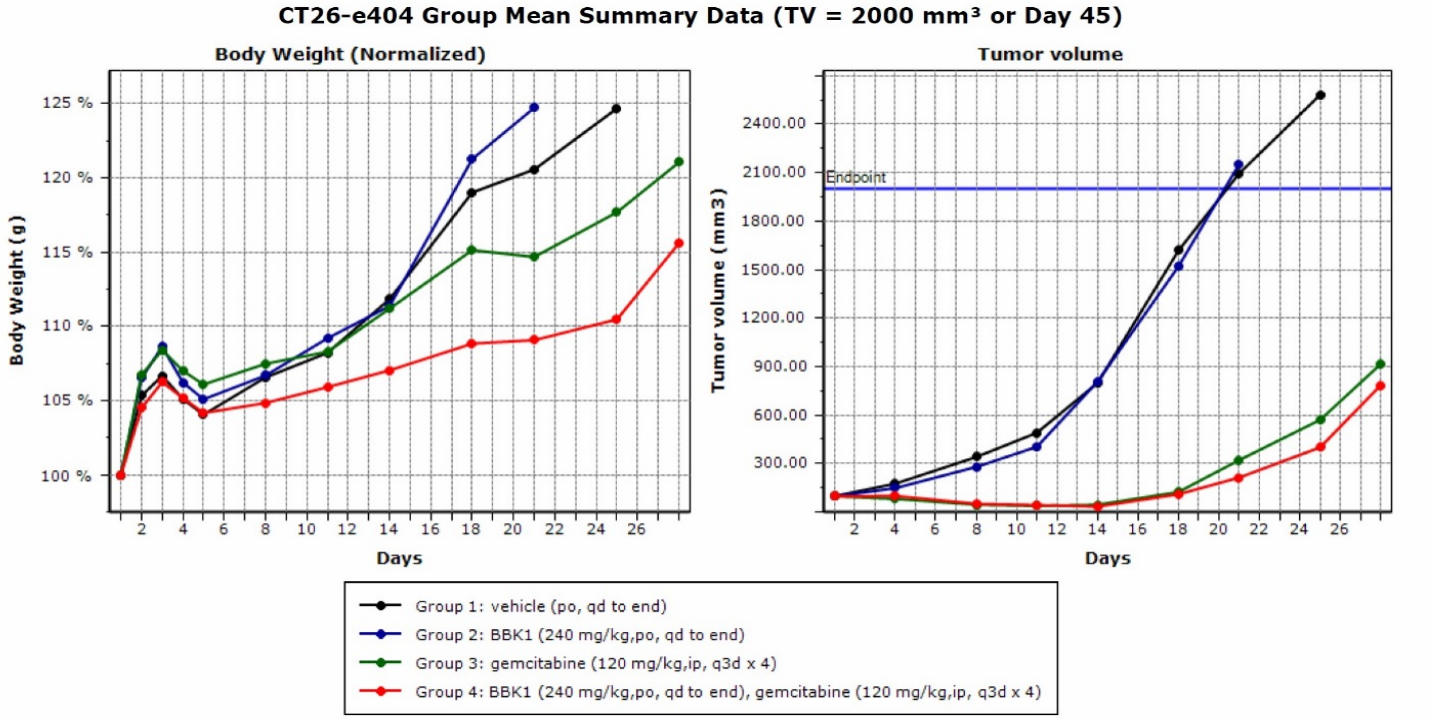


CorreQT™ Technology Does Not Inhibit Anti-Tumor Efficacy

Although Signpath's CorreQT compounds protect the heart from chemotherapy damage, they do not interfere with the anti-tumor efficacy of the chemotherapy agent. The red and green lines on the right hand graph show the tumor volume of mice treated with chemotherapy alone and chemotherapy plus Signpath's CorreQT compound (identified as BBK1.)



SPP 4040 Strategy

- ***SignPath's anti-arrhythmia strategy is to create second generation "heart safe" versions of drugs with proven efficacy.***
- ***Co-formulate SPP4040 with existing, approved problem drugs.***
- ***SignPath will license it's proprietary CorreQT technology to companies who are facing obstacles in developing pipeline drugs due to cardiac safety issues.***
- ***SignPath will also pursue approval of SPP4040 as a stand-alone cancer supportive care drug to protect cancer patients' hearts from the cardiomyopathy damage associated with chemotherapy.***
- ***SPP4040 clinical trials to begin in 2020.***

LIPOCURC™ (LIPOSOMAL CURCUMIN)

- ***LipoCurc is Signpath's first clinical application of its technology to address cardiotoxicity.***
  - Curcumin pro-arrhythmic side effects eliminated.
  - No cardiotoxicity observed in 70 human patients.
- ***LipoCurc has unique mechanisms of action, which allow for single agent activity, and synergy with other anti-cancer drugs.***
  - Clinical activity in human cancer
  - Kills cancer stem cells
  - Counteracts cancer related immunosuppression
  - Crosses the blood/brain barrier which allows for treatment of brain tumors
  - Observed efficacy in end-stage cancer patients who failed 6-7 prior treatments.
  - Accumulates preferentially (500x) in cancerous blood cells, which allows it to target blood cancers.
- ***LipoCurc has minimal toxicity.***

LipoCurc—PHASE II CLINICAL TRIAL TARGETS

- ***Glioblastoma*** This will be done at Johns Hopkins. Market size is over $3 billion despite the fact that there is currently no effective treatment

- ***Mesothelioma*** The Australian government is funding 100% of costs for Phase II testing. (Flinders University in Adelaide.) Market size is currently $340 million (no effective treatment)

- ***Multiple Myeloma*** Phase II site not yet finalized. Market size is expected to be $20+ billion in five years

- ***Soft Tissue Sarcoma*** Phase II trials to be held at University of Nebraska. The global market size is expected to be $1.2 billion by 2023.

- ***Extremely Broad Patent Protection:***

- Numerous issued and pending patents protecting cardiac arrythmia and cardiomyopathy protection.
  - Patent position prevents competition in the field of mitigating arrhythmia using lipids and empty liposomes
  - Broad use patents, and specific composition of matter patents

- Patent protection on LipoCurc, with both composition of matter and method of use patents issued and pending.

CURRENT STAGE AND PRODUCT DEVELOPMENT

- ***SPP4040 Progress To Date***:
  - Proven successful with more than 35 drugs in animal testing
  - Animal studies show no toxicity
  - Planned trials will be relatively simple, quick, and inexpensive
  - Clinical trials to begin in 2020

- ***LipoCurc Progress To Date:***
  - Completed phase I trials in 70 humans.
  - End stage cancer patients who had failed 6-7 prior treatments showed dramatic decreases in their cancer markers and clinical benefit.
  - Phase II trials to begin in 2020

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