NORI
Nutritional Oncology
Research Institute

The NORI Nutraceutical Tool Box

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General

The following is a list and description of all the currently utilized selective chemotherapeutic agents within the NORI protocol. These agents have been selected from a very large pool of natural compounds that exhibit anti-tumor activity. All agents utilized within the NORI protocol are supported by extensive scientific evidence which includes both in vitro and in vivo studies. For some of the agents, there are human clinical studies demonstrating safety and efficacy.

All of the listed agents cause an elevation of oxidative stress and are therefore classified as pro-oxidants. All agents directly target the mitochondria and trigger apoptosis. The objective for an effective and targeted treatment is to cause further damage to already damaged mitochondria. This will trigger apoptosis. Normal cells are spared of any damage because of a much lower baseline oxidation level.

Certain combinations of the listed agents are synergistic while some combinations are not. Follow the NORI protocol chart which groups the most synergistic agents together.

In pharmacology, LADME stands for Liberation-Absorption-Distribution-Metabolism-Excretion. Each step in pharmacokinetics will determine how effective an agent will be within a human system. Consideration of LADME is essential in choosing every compound that is incorporated into NORI nutraceuticals.

Many natural compounds exhibit potent ant-cancer activity in vitro but fail to produce results in vivo. This is usually due to low bioavailability that limits the peak plasma concentration and time necessary for treatment response.

Water soluble compounds are ideal but fat soluble compounds can be useful too if dissolved in a suitable carrier. In some cases, fat soluble compounds are best delivered as a micro-emulsion which is an oil/water mixture.

This list is not exhaustive and will continue to grow with continued research and clinical experience.

Not included in this list are hormonal blockers and modulators. Also not included is potassium bicarbonate which is used to raise extracellular pH.

Except for taurine, all NORI nutraceuticals are proprietary products available only through NORI.

Disclaimer: All statements regarding NORI nutraceuticals have not been evaluated by the United States Food and Drug Administration. NORI nutraceuticals are not intended to diagnose, treat, cure or prevent any disease. NORI nutraceuticals are provided as a component of a nutritional support program and are not intended as a substitute for conventional medical care.

NORI Nutraceuticals

Sodium Selenite, SSe, Na2SeO3

SSe is an inorganic form of selenium. Sodium selenate (Na2SeO4) is 300 times weaker than SSe. SSe is nontoxic when administered at the dosages prescribed within the NORI protocol. The first signs of toxicity are hair loss which is reversible.

The typical dosage range for SSe is 10-30 mg per day intermittently or 5-10 mg per day continuously. SSe can be administered intravenously or orally

as a sublingual tablet or sublingual liquid drops. SSe is supplied as 2 mg sublingual tablets or as liquid drops at 500 mcg per drop. SSe can also be supplied as a topical gel.

Selenomethionine, Se-Met

Se-Met is an organic form of selenium that exerts anti-tumor activity at about five times the concentration of sodium selenite. Se-Met is an option for those unable to tolerate sodium selenite. Se-Met is swallowed and at low doses does not trigger nausea. Se-Met is supplied as a 10 mg tablet. NORI is administering SSe and Se-Met together for possible synergistic effect or layering of action in different pathways. Se-Met may limit methionine entering cancer cells through selective competition.

Vitamin K3, menadione sodium bisulfate, VK3

This is a water soluble form of menadione. Vitamins K1 and K2 have very little or no ant-tumor activity compared to vitamin K3. VK3 is a 1,4-naphthoquinone. VK3 depletes glutathione and is a redo recycling agent. The dose range for VK3 can be from 50-250 mg per day taken orally. There are no known adverse side-effects from VK3. VK3 is supplied as menadione sodium bisulfate which is water soluble. Each tablet supplies 25 mg of VK3.

Shikonin, SHK

SHK is a natural 1,4-naphthoquinone derived from the outer bark of the root of Lithospermum Ertyhorizon (Gromwell Root). The SHK molecule is very similar to VK3 and works through the same mechanisms but at lower concentrations. SHK can be applied externally directly to tumor or taken orally by capsule. SHK is dissolved in DMSO creating a thick black paste.

NORI has temporarily suspended the use of SHK due to high cost and limited availability.

Vitamin E Succinate, Alpha-Tocopheryl Succinate, VES

VES is a semisynthetic form of vitamin E. VES interferes with complex II of the electron transport chain within the mitochondria. VES can not be administered orally due to hydrolysis within the GI tract that causes the loss of the succinate group of the molecule. VES is administered as a transdermal cream that enters the blood stream with the succinate molecule mostly intact. VES administered orally is completely ineffective as as an anti-cancer agent because the succinate molecule is totally lost through hydrolysis within the GI tract.

Genipin, Gardenia Fruit Extract, Zhi Zi

Genipin causes oxidative stress in cancer cells by inhibiting UCP2 which regulates the mitochondrial TCA cycle. Genipin may trigger apoptosis directly or my sensitize cancer cells to other cytotoxic agents. Genipin is supplied as an oral tablet. There are no known side effects at the prescribed doses.

Pine Bark and Grape Seed Extract, Proanthocyanidins, GSE/PBE

GSE/PBE contain powerful ant-tumor compounds called proanthocyanidins. GSE and PBE have been shown to trigger apoptosis in a wide array of cancers at a reasonably low concentration. Bioavailability is very good at the 40-70% range allowing orally administered preparations to achieve the required plasma concentration. GSE/PBE is supplied as an oral tablet. There are no know side effects at the prescribed doses.

FASN Inhibitor, FASN

NORI has developed a novel FASN (fatty acid synthase enzyme inhibitor) composed of luteolin, ellagic acid, ursolic acid and resveratrol. Inhibiting FASN has been shown to selectively trigger apoptosis. FASN is highly expressed in most cancer types. The FASN inhibitor is supplied as an oral tablet. There are no known side effects at the prescribed doses.

Green Tea Extract, GTE

GTE contains a high concentration of EGCG which demonstrates anti-cancer activity. EGCG is also a FASN inhibitor so it is taken together with the NORI FASN nutraceutical. There is some caffeine present in this nutraceutical and should not be taken at night. GTE is supplied as an oral tablet.

Taurine

The amino acid, taurine, has been demonstrated to trigger apoptosis in breast, liver and colon cancer cells when administered at 200mg/kg or greater. Taurine is completely nontoxic at high doses and is typically administered orally at 10 grams total per day. Taurine is completely water soluble, highly bioavailable and nontoxic.

Taurine can be administered as capsules which are available at either 800 or 1000 mg. Taurine can also be dissolved in water and one can drink the solution in 3-4 divided doses. Taurine is readily available through any health food store or online.

Zinc Sulfate, $ZnSO_4$

Zinc at doses in the range of 200 to 300 mg daily will trigger apoptosis in a wide range of cancers. Zinc sulfate is utilized because it is a water soluble form of zinc. About 1 gram of zinc sulfate is required to obtain 300 mg of elemental zinc. NORI created a slow release zinc sulfate tablet.

Alpha-Bisabolol, BSB

BSB is a sesquiterpene derived from German chamomile and other plant species. BSB can be applied directly to tumor of the skin just above a tumor. BSB is GRAS and there is no known toxicity. BSB is anti-inflammatory and speeds up wound healing.

NORI produces BSB as a topical agent diluted in almond oil. An oral sublingual form will be available in the near future.

Linalool, LNL

LNL is a monoterpenoid present in a wide range of plant foods, herbs and spices. Lavender essential oil can contain up to 30% LNL. LNL is used in the food and cosmetic industry and is GRAS. LNL exhibits potent ant-cancer activity primarily by generating ROS and triggering apoptosis. LNL targets mitochondria and is a highly selective chemotherapeutic agent.

NORI is developing oral and transdermal nutraceutical products based on a combination of LNL and BSB.