Anti-cancer Technology Summary





Selective Anticancer Compounds from Plant

Background:

Breast, colon and prostate cancers are ranked 2^{ed}, 3^{ed} and 11th of the most diagnosed cancers (National Cancer Institute, USA). Current treatments rely mainly upon chemotherapy which causes severe side effects as it kills not only cancer cells but also healthy ones. A great opportunity exists for targeted therapies for the use solely or in combination with cytotoxic drugs. Targeted therapies market share is expected to reach 55% of the top tier cancer treatments by 2015.

Invention:

Saponin extract was prepared from *Saponaria vaccaria* and three compounds isolated. The pure compounds demonstrated excellent anti-cancer and pharmacological properties:

In Vitro

 Induce cell death at low concentrations (5 µM) in the following human cancer cell lines

Cancer Cell Line	Breast	Colon	Prostate	Multiple myeloma
Cell Death Ratio	63%	62%	84%	85%

- Non-toxic to several non-tumorigenic cell lines at analogous doses.

In Vivo

- Extend life of mice injected with B16 mouse melanoma cell line.
- Cause no liver or organ damage in rats at doses of up to 4.5 mg/kg/day (i.p.) over 7 days
- Cause no other observed effect in dose of 1.5mg/kg/day over 7 days (i.p.).

Pharmacological

- Possess low hemolytic activity, using free saponin HD 50 is 55 μM and using formulated saponin with sterols and phospholipids it increase to 160 μM (suitable for i.v or i.p. application).
- Ampiphilic and can be used as aqueous solubilizers of lipophilic "co-drugs".

Patents:

- Saponin extract from saponaria spp. and uses thereof: (WO 2009/117828)
- Method for production of saponaria from microspores: (WO 2006/116876)

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Plant Based, Selective, Anticancer Compounds

Development Stage:

This is the result of an ongoing research program. Over the past 8 years scientists were able to optimize the extraction method, achieve 95% purity of the compounds, screen against multiple cell lines, establish pharmacological properties and conduct some invivo testing.

The compounds have successfully passed the first stage of screening by the National Cancer Institute, USA against 60 human tumor cell lines and are currently being tested in the second stage using a wider dosage range.

Partnership

Technology is ready for licensing/co-development including:

- Animal testing of existing compounds and commercialization.
- Development of semi-synthetic analogs with the current leads.

Principle Inventors:

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