

C-ter PEDF. Facing Cancer: DIVIDE AND WIN

Over control of proliferation of tumor-initiating cells, delaying relapse in cancer patients

It has been possible to synthesize a new molecule inhibiting self-renewal of tumour initiating cell. It increases the efficiency and effectiveness of chemotherapeutic treatments by reducing the drugs up to half the dose, with identical results and lower side effects for the patient. In addition, this molecule could facilitate the option to the health professional for a personalized treatment, increasing doses and cycles in the cases in which it is necessary. Guaranteeing the economic optimization to the health system. The results have been verified in three of the tumour types with higher population incidence and higher mortality and morbidity (colon, breast and cerebral GBM cancer).

Technology solution supported by the Technical University of Madrid

Technology solution

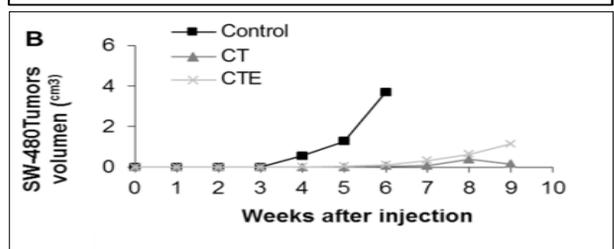
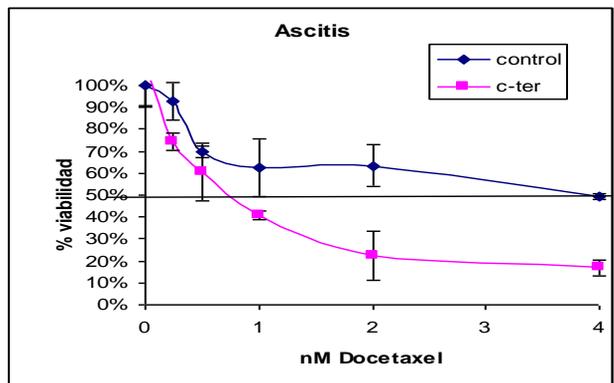
C-ter PEDF is a regulator of cell division kinetics, capable of removing tumor initiating cells from their quiescence, making cell division faster and better responding to chemotherapy.

Therefore, combined with current anti-neoplastic treatments make them more effective and efficient, because allow a reduction of the chemotherapy dose administered to each patient with the consequent decrease in side effects. So that, for the same response it will be needed half doses saving also costs to the sanitary system .

"New paradigm in the fight against cancer and relapse of patients already treated: elimination of tumor initiator cells"

Areas of application

- **Health Sector:** Colorectal cancer on treatment with oxaliplatin and irinotecan. Breast Cancer Treatment with docetaxel. Glioblastoma treated with emozolamide
- **Biomedical research:** In cellular signaling pathways involved in self-renewal of CSCs.



Market demands

▪ Health

- In Spain there are more than 200,000 new cases of tumors every year; WHO forecasts a global increase of over 20 million per year by 2020 and more than 8 million deaths per year.
- The estimated costs per patient are \$ 50,000 the first year, \$ 6,000 the remaining costs and up to \$ 100,000 in the last year of life due to relapses
- Despite the significant improvement of current treatments (greater effectiveness and lower side effects), 35% of patients suffer relapse.
- It is required a paradigm shift, from therapies designed against tumor growth and proliferation, to another directed at cells responsible for relapses (called quiescent), avoiding reactivation in the absence of tumor.
- Reducing the effective dose of chemotherapy will mean both a decrease in pharmaceutical costs, as well as an increase in the quality of life of the patient and a therapeutic mattress for the medical prescription in each case.

▪ Biotechnology (Health Research)

- There are no specific biomolecules identified for working with tumor stem cells.
- The molecules that regulate cell resistance to chemotoxic agents are not known.

“Relapses in patients produce tumors of greater aggressiveness and dissemination to other organs by metastasis. Metastases are the leading cause of death from cancer”

Market potential

▪ Health

- The number of deaths per year for cancer is 171.2 per 100,000 inhabitants
- Domestic spending in the US was \$125 billion in 2010 and is estimated to increase to \$ 156 billion by 2020. [<https://costprojections.cancer.gov/annual.costs.html>].
- In Spain, the average is 30,000 euros per patient, for an average survival of 25 months.

▪ Biotechnology (Health Research)

- More than 70% of the publications in the field of TICs (tumor initiating cells) are produced in the field of biochemistry and cellular biology, the basis of biotechnology in Health Research [[Http://www.pharmaceutical-business-review.com](http://www.pharmaceutical-business-review.com)].
- Both industry publications and patents have increased by 80% in the last 5 years, with funding from the European Commission [PBR].

Competitive advantages

- Increases the effectiveness of current anti-tumor treatments by up to 50%.
- Synergistic with the drugs in use, both in the 1st and 2nd lines of treatment of relapse.
- Increases efficiency by reducing up to 50% of expenses and side effects.
- Increases dose control by the practitioner, for a personalized medicine.
- High tolerance in the living cell.
- The results have been verified in three of the tumor types with the highest population incidence and higher mortality and morbidity (colon, breast, and cerebral GBM).

“Delayed relapse in already treated tumors”

References

- Six research awards including the Alberto Sols National Award for Best Scientific Work in 2008.

IPR

- Protected under European patents

Development stage

- Concept
- R & D
- Lab Prototype
- Industrial Prototype
- Production

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