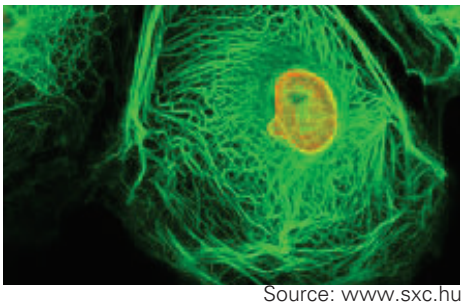
CYTOMODULATORY COMPOUNDS

Cancer kills about 7.6 million people a year, a number that may reach up to 12 million/year by 2030 (WHO, 2004). The search for a cure involves the control of cell proliferation.



Source: www.sxc.hu

Research into potential targets | **Preclinical research** | **Clinical research** | **Registration** | **Market**

Drug

Description

Compounds isolated from a vegetable species abundant in the Americas with modulatory action against uncontrolled cell proliferation, which can be used for the prevention and/or treatment of cancer and other diseases.

Problem

Cancer, or malignant neoplasm, is the generic name for a group of diseases characterized by uncontrolled cell proliferation, which may start in a single cell.
Cancer is a leading cause of death worldwide, accounting for 13% of deaths and claiming 7.9 million victims in 2007. The World Health Organization (WHO) predicts a 45% increase in cancer cases by the year 2030, reaching a death toll of 11.5 million (WHO, 2010).
There are currently more than 9000 ongoing clinical trials in the U.S., searching for the treatment of over 100 types of described cancers (NIH, 2010).

Proposed solution

Compounds of vegetable origin with cytomodulatory activity, which may be promising drugs for the treatment of cancer and other pathologies. These compounds present:

– 90% in vivo inhibition of experimental tumor growth compared to 52% of the gold-standard commercial compound (dosage of 25mg i.p.),
– Low toxicity of the gastrointestinal tract,
– Reduced side effects such as Nausea,
– Apoptosis rate of 88%,
– CI50 below 1µg/mL (low production cost),
– Fifty-seven-fold increase in the DNA fragmentation rate of malignant cells,
– Greater effectiveness in fighting neoplasia.

Benefits

The technology is in the phase of non-regulated pre-clinical trials, although in vivo and in vitro pharmacological tests of general toxicity and genotoxicity have been conducted using cell lines of human and murine carcinomas. The table below shows the results of in vitro cytotoxic activity of the compound Casearin X on human cancer cell lines based on the test of 50% inhibitory concentration (IC_{50}).

Cell lines	Type of neoplasm	Ic_{50} µg/mL
CEM	Leukemia	0,60
HL-60	Leukemia	0,73
K-562	Leukemia	0,98
MDA / MB 435	Breast Carcinoma	1,15
MDA / MB 231	Breast Carcinoma	1,76
PC – 3	Prostate Carcinoma	2,05
HCT – 8	Colon Carcinoma	3,91
SF - 295	Glioblastoma	5,87
B – 16	Murine Melanoma	3,34

Other trials performed (further details upon patent request):

Pharmacological trials:
- In vitro cytotoxic activity
- Toxicity to tumor cell DNA
- In vivo antitumor activity

General toxicity trials:
- Determination of LC50 for 9 neoplastic lines
- Cytotoxicity to healthy cells
- Determination of histopathological alterations

Genotoxicity trials:
- Genotoxicity on healthy cells

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