

# CANNABINOIDS. Antitumor action and palliative effects in the treatment of patients with cancer

## INTRODUCTION

- ✳ *Cannabis sativa* L.: scientific, clinical and social importance.
- ✳ Cannabinoids: active compounds of *C. sativa*.
  - ✳  $\Delta^9$ -tetrahydrocannabinol (THC) :  $\uparrow$  Power & Abundance
- ✳ Cannabinoids activated specific receptors CB1 & CB2, which causes changes at the neuronal level and allows for tuning of different biological processes.
- ✳ Endocannabinoid System = Endocannabinoids + Receptors
  - ✳ Pharmacological manipulation  $\rightarrow$  Disease management

## OBJECTIVES and METHODOLOGY

1. Describe the main mechanisms of anti-tumor action of cannabinoids and his palliative effects in cancer treatment.
2. Vision and social involvement by associations (FEDCAC) in the regulation and use of cannabis for therapeutic purposes.
3. Get a real idea about the use of cannabis for therapeutic purposes.

SCIENTIFIC ARTICLES

CONFERENCES

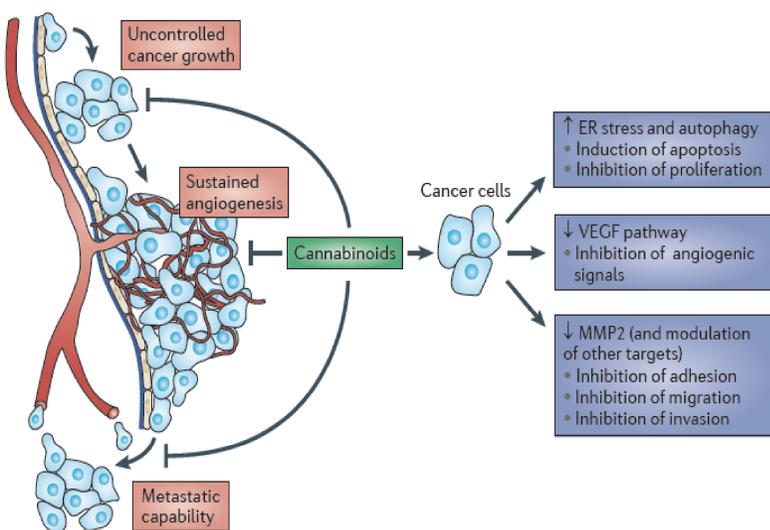
personal contact  
(associations)

doctoral  
theses

INTERVIEWS

## RESULTS

### Mechanisms of antitumour effects



General mechanisms of cannabinoid antitumour action (Velasco *et al.*, 2012).

1. Induction of cancer cell death (apoptosis)
2. Reduction of angiogenesis
3. Inhibition of invasion and metastasis

Disputes



### Palliative effects

- ✳ Potential of cannabinoid agonists still in preclinical phase.
- ✳ Products declared as medicinal cannabis:

Cannabinoid	Source	Registered name and official status	Indications	Route of administration and formulation	Onset and duration of action
Dronabinol	Synthetic $\Delta^9$ -THC	Marinol (Solvay Pharmaceuticals) FDA approval (2003)	Anorexia/weight loss (AIDS patients) Nausea and vomiting (cancer patients)	Oral Capsule formulated with sesame oil	30-60 min, 4-6 h
Nabilone	Synthetic $\Delta^9$ -THC analogue	Cesamet (Valeant Pharmaceuticals) FDA approval (2006)	Nausea and vomiting (cancer patients)	Oral Crystalline powder capsule	60-90 min, 8-12 h
THC & CBD	Isolated from <i>Cannabis sativa</i>	Sativex (GW Pharmaceuticals) Approval with conditions in Canada (2005). Limited availability in Spain and UK	Symptomatic relief of neuropathic pain (multiple sclerosis patients)	Sublingual Oro-mucosal spray	15-40 min, 2-4 h

(Pisanti *et al.*, 2009)

- ✳ Recognized role
  - Inhibition of chemotherapy-induced nausea and emesis
- ✳ Emerging roles
  - Pain inhibition
  - Appetite stimulation (orexigenic effects)

### Social interest

- ✳ FEDCAC
  - Create a structure to regulate all aspects in relation with cannabis and his consumption.
  - Be a model programs to reduce risks and harm associated with cannabis consumption.
  - Telemedicine service (IACM).

- ✳ Real cases



- Breast cancer
- Advanced breast cancer
- Multiple system atrophy
- Degenerative osteoarthritis

## CONCLUSIONS

- ✳ Aggressiveness of certain cancers + low success of current therapies = need to develop new therapeutic strategies for the treatment of tumors.
- ✳ Treatment with cannabinoids induces mechanisms to destruction tumor cells without causing side effects, and his palliative effects are becoming more apparent.
- ✳ It's necessary to translate research with cannabinoids into practical applications to finally cure or alleviate diseases.
- ✳ It's essential to face the reality of the medical use of cannabis to inform consumers properly and give quality guarantees: cannabis is a therapeutic remedy with high efficacy.