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Alternative cancer treatments
Science or Fiction

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INTRODUCTION

Sometimes a video becomes viral, and comes to million people. The problem comes when this viral speech on a topic that concerns the whole society, the cancer. Let's pay attention to Albert Martí Bosch's particular case. Doctor, pediatric ex-oncologist and tired of watching the children suffering for aggressive cancer treatments, he studied naturalist medicine and developed a new alternative cancer treatment. He showed to the world his therapy in a conference organized by WARC and Discovery Dsalud. He was making guess that he could cure the cancer if their patients were following his indications.

AIMS

- To determine if his indications are way correct or he wants to sell the public some illusion
- To determine if there are some real treatments that could support his arguments and open a new vision to cancer treatment

METHODOLOGY

- Literature research on online databases (PubMed and Isi Web of Knowledge).
- Literature research using the references of other articles previously read.

PISCHINGER SYSTEM

According to the conference, lungs, liver and kidneys lose his filtering capacity in consequence of the current way of life. Then waste cellular accumulates in the ECM in acid form, diminishing the cellular nutrition and producing diseases. This process is known as Pischinger system. Cells to defend itself use **three strategies:**

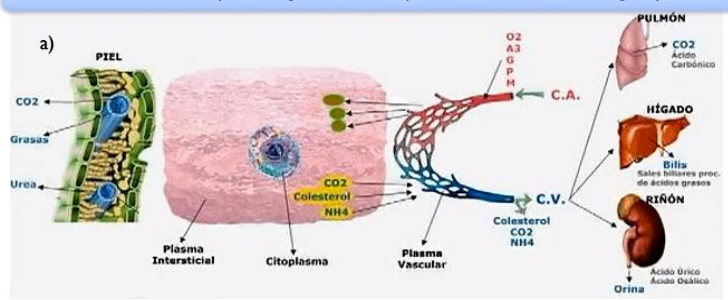


Figure 1. Pischinger system. a) Optimum state b) Damaged state Albert Martí Bosch 2013

Accumulate water into intersticial space
- Fluid retention

Neutralize acids using minerals from other body parts
- Osteoporosis, artrosis, artritis

Drain through the skin
- Dermatitis, psoriais, eccemes

MUTATE FOR ADAPTATION

There is a last strategy that cells can realize to defend itself, **mutation to tumoral cell**

Healthy cell	Tumoral cell
Alcaline milieu	Acid milieu
Aerobic milieu	Anaerobic milieu
Low [Na+]	High [Na+]

RECOMMENDED THERAPIES

- Bath with salt once a week
- Take infusions
- Eat once a week vegetarian
- Less salt in our diet
- Homeopathy
- Ozonetherapy

We will have clean filters the whole, then we would not have cancer.

ALCALINE DIET

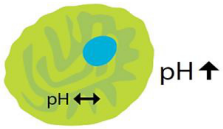
Some alternative medicine instructors have recommended the alcaline diet in order to alcalinize body and cure diseases.

Benefits	Discussion
Diminishes stomach acidity	There is no food capable of changing stomach pH because of it has to be acid
Osteoporosis	Acid food can't alter systemic pH
Cancer	If you could alkalinize blood you would kill all body cells and cause death

THE TRUTH: FUTURE TREATMENTS

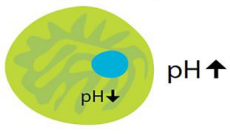
Manipulation of the extracellular (pHe) and/or intracellular (pHi) pH of tumors may have considerable potential in cancer therapy. The extracellular space of most tumors is mildly acidic, owing to production of lactic acid. Aerobic glycolysis (attributable to chronic activation of HIF-1) as well as tumor hypoxia are responsible for this phenomenon. Tumor acidity tends to correlate with cancer aggressiveness, due to angiogenesis and invasiveness promoted by HIF-1.
It is known that pHe *per se* boosts the metastatic capacity of tumors and renders cells relatively resistant to high proportion of chemotherapeutic drugs that are basic. [1]

Alkalizer Therapy



In rodents, oral administration of sodium bicarbonate can raise the pHe inhibiting metastasis and improving responsiveness to certain cytotoxic agents.

Proton Pump Inhibition



Inhibition of proton pump may alleviate pHe while lowering pHi, slowing proliferation and promoting apoptosis in various cancer cell lines.

Figure 2. Therapeutic Strategies for Manipulating Tumor pH McCarty, M. F., & Whitaker, J. (2010). Manipulating tumor acidification as a cancer treatment strategy. Altern Med Rev, 15(3), 264-72.

The local microenvironment of a cancer cell plays important roles in cancer development. A major component of the niche is the **extracellular matrix (ECM)**. Although tightly controlled during embryonic development and organ homeostasis, the ECM is commonly deregulated and becomes disorganized in diseases such as cancer.
Abnormal ECM affects cancer progression by directly promoting cellular transformation and metastasis. Importantly, however, ECM anomalies also deregulate behavior of stromal cells, facilitate tumor-associated angiogenesis and inflammation, and thus lead to generation of a tumorigenic microenvironment. [2]

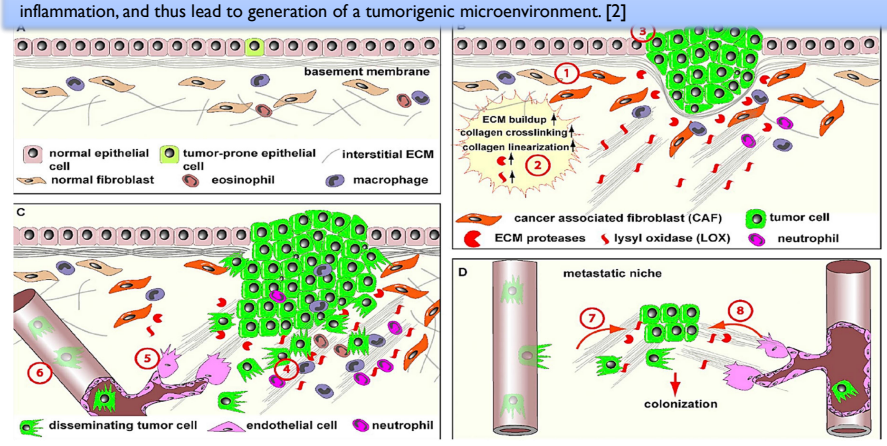


Figure 3. Abnormal ECM promotes cancer progression. Lu, P., Weaver, V. M., & Werb, Z. (2012). The extracellular matrix: a dynamic niche in cancer progression. *The Journal of cell biology*, *196*(4), 395-406.

CONCLUSIONS

- Understanding how ECM composition and topography are maintained and how their deregulation influences cancer progression may help develop new therapeutic interventions by targeting the tumor niche.
- Manipulation of the pHe and pHi may have considerable potential in cancer therapy.
- It should be kept in mind that the Internet is not always a reliable source

REFERENCES

- [1] McCarty, M. F., & Whitaker, J. (2010). Manipulating tumor acidification as a cancer treatment strategy. Altern Med Rev, 15(3), 264-72.
- [2] Lu, P., Weaver, V. M., & Werb, Z. (2012). The extracellular matrix: a dynamic niche in cancer progression. *The Journal of cell biology*, *196*(4), 395-406.