



Would a Bacteria be Helpful in Cancer Therapy ?

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Introduction

Cancer is one of the leading causes of death at present time. Millions of people die or have decreased quality of life every year around the world. Loss of labor because of cancer is also an important concern. In curable cancer types, the economic sources of the country are expended for drugs and medical materials. The scientists who are in search for the cure of cancer have used microorganisms and their products in their studies. the administration of bacteria and their products in cancer treatment is reviewed.

The usual treatment for cancer :

Chemotherapy

Surgery

Radiation therapy

View Back to the past

•The idea of using bacteria in cancer therapy is often presented as a new approach but in reality the first report describing a connection between infections and a treatment of cancer was documented by the Egyptian physician Imhotep 2600 BC.

more recently the first “clinical trial” was performed by W. Busch in Berlin intentionally infected a female cancer patient by transferring her into a contaminated bed As a result, the tumor did regress.

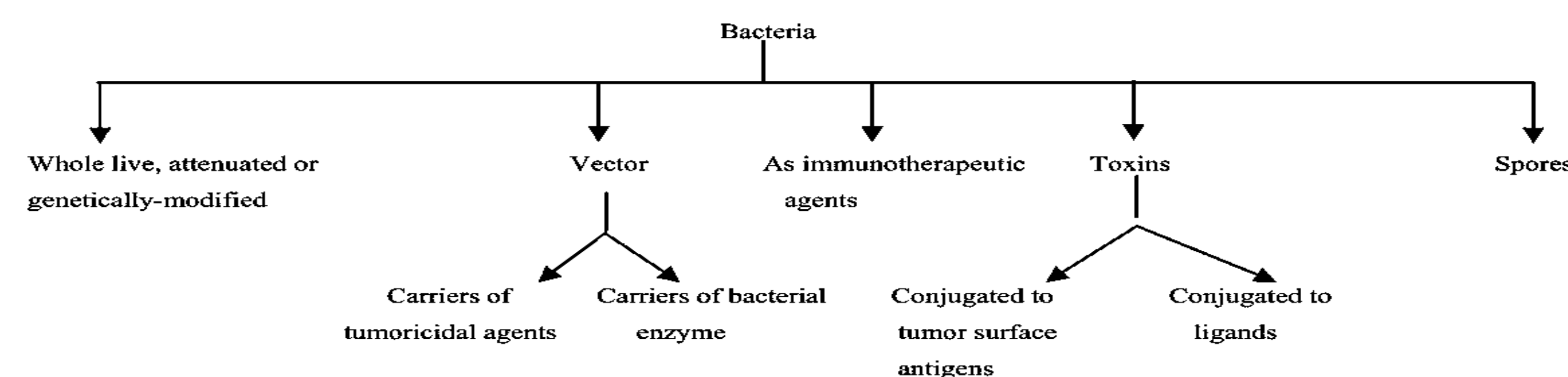
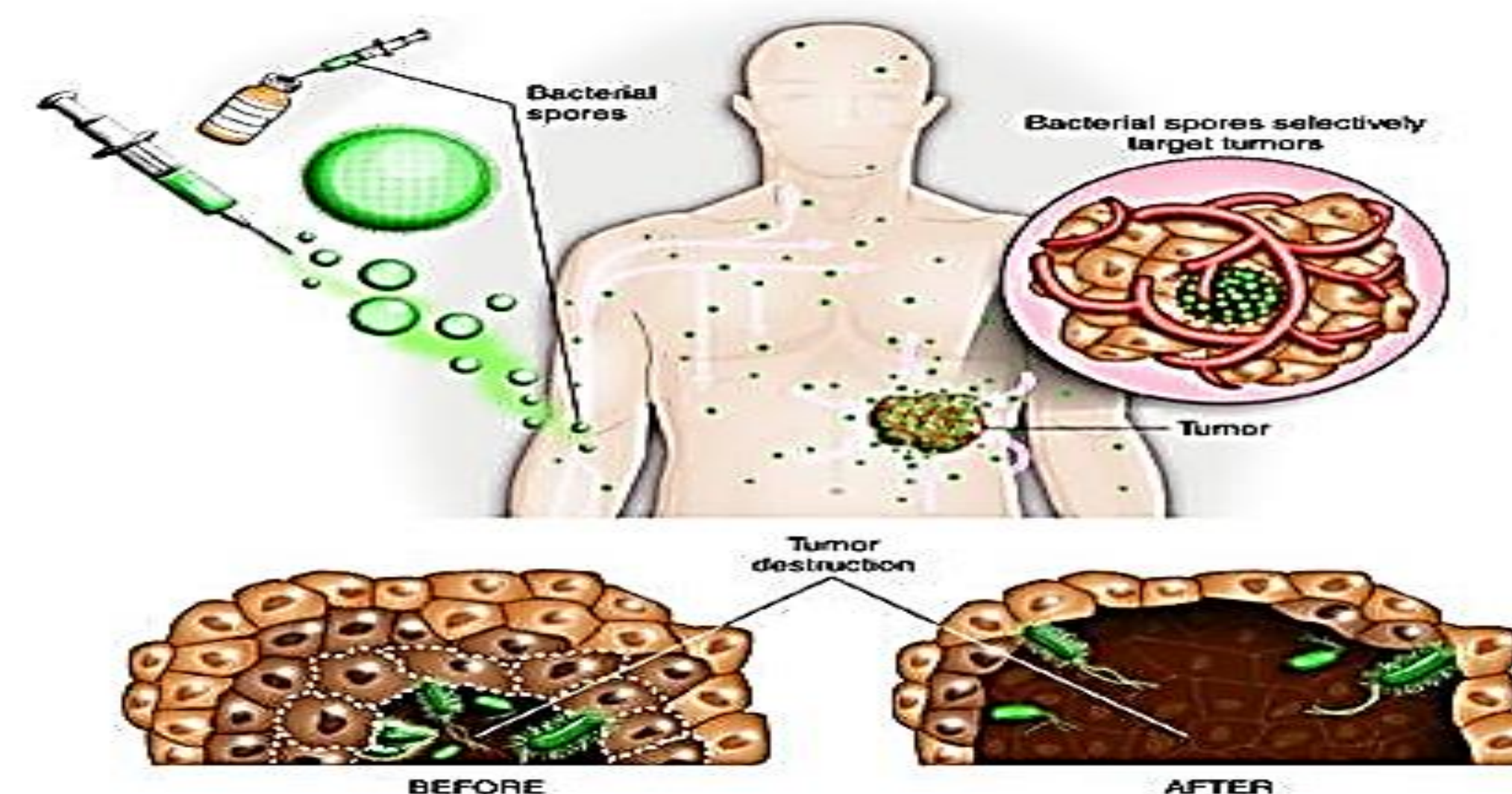
Inspired by history the American William Coley became the first pioneer of cancer immune therapeutic he applied a mixture of heat-inactivated *Streptococcus pyogenes* and *Serratia marcescens*, known as “Coley’s toxin,” to many patients affected with sarcomas. The treatment was very effective . (1)

Current concept of bacteria mediated cancer therapy

•Bacteria therapy is when you inject bacteria cells to the body to help certain treatment such as cancer .

chemotherapeutic agent have hard time of penetrating the core of tumors because of the poor blood supply

Researches have been using anaerobic bacteria such as *Clostridium novyi* to consume the interior of oxygen poor tumour centre than die when they come in contact with oxygenated tumour sides . (3)



Side effects of bacterial therapy

- Tixocity
- Infections
- Incomplete tumour lysis
- DNA mutation (2)

Future direction

Currently bacteria therapy have shown promising and significant potency in eradicating tumors mouse models But since cancer is a multi-factorial disease no single therapy is completely suitable for it

so its expected for this method to combined with other modalities to reach the desired result (2)

Conclusion

- Resistance to anticancer therapies has prompted the need of alternative cancer therapy .
- the success of bacteria mediated cancer therapy depends on selectivity for cancer cells and limited toxicity to normal tissue .
- although this method has shown successful results in vivo yet , further investigation about targeting mechanism are required to make it a complete therapeutic approach in cancer treatment.

Reference

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3. N. J. Roberts, L. Zhang, F. Janku et al., “Intratumoral injection of *Clostridium novyi*-NT spores induces antitumor responses,” *Science Translational Medicine*, vol. 6, no. 249, p. 249ra111, 2014