

Three species of main bacteria in treatment of cancer

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ABSTRACT

Cancer is identified by uncontrolled growth of cells. These cells may spread to other parts of the body, and this is called metastasis. Bacterial treatment is a new idea in the world. In this hypothesis, three species of bacteria in treatment of cancer were introduced.

Keywords: Cancer, bacteria, treatment, *Listeria monocytogenes*

Cancer is described by uncontrolled growth of cells. These cells can extend to other places of the body which is called metastasis condition. Traditional anticancer treatments including surgical resection, radiotherapy and chemotherapy are powerful in the administration of numerous patients. However, for malignancy sufferers these are

ineffective treatment, so selective strategies have been created to focus on the tumors. Trial tumor medicines are restorative treatments proposed to treat growth of cells by enhancing supplementing custom strategies. These strategies include gene therapy, photodynamic therapy by telomerase enzyme, hyperthermia therapy,

Shahcheraghi et al.

non-invasive cancer treatment, complementary therapy such as curcumin, insulin therapy and treatment by bacterial productions or toxins [1].

There are three main species of bacteria that have been described in this hypothesis as agents of anti-cancer factors:

Some anaerobic species of bacteria especially *Clostridium* such as *Clostridium beijerinckii*, *C. histolyticum*, *C. novyi-Non Toxigene*, have a characteristic capacity to target tumors. Subsequently, they could colonize just inside the necrotic and hypoxic regions of tumors, and then microbial development inside the tumor could have cytolytic and oncolytic impacts. *Clostridia* can express interleukin 2 (IL-2) and tumor necrosis factor (TNFa) with antitumor insusceptibility and direct antitumor highlights by hereditary adjustments [2].

Salmonella typhimurium, notwithstanding intrusion of apoptosis in tumor cells, is the capacity to enter inside a tumor mass because of motility and moving far from the vasculature of metastases. Foundational infusion of built constricted *S. Typhimurium* with TNF-related apoptosis-inducing ligand under the control and furthermore utilizing γ light are appeared to restrain mammary carcinoma cell multiplication [3].

Listeria monocytogenes is a gram positive organism and intracellular bacterium. In the

Bacteria in treatment of cancer

recent couple of decades, different examinations have been demonstrated that it could be worked malignancy remedial specialist with various impact or components [4]. It could be utilized against essential and metastatic tumors in an invulnerable special microenvironment. The last helps its particular colonization and favors their disposal with free radicals creation [5]. Moreover, *Listeria monocytogenes* diminishes T-administrative cells and immunomodulation atoms. For example, TGF β and IL10 in tumor microenvironment. Notwithstanding, fundamental component of *Listeria monocytogenes* comprises on specifically contaminating APCs favoring self-antigen and heterolog antigens preparing and introduction. These qualities make *Listeria monocytogenes* to be considered as an important immunostimulant agent [6].

Therefore, we could use bacteria for treatment of cancer by genetic engineering of enzymes and by toxic productions of organisms.

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Shahcheraghi et al.

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Bacteria in treatment of cancer

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