Studying the effects of several heat-inactivated bacteria on pancreas and gallbladder cancer cells

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List disclosures for all authors

The authors declare that they have no conflict of interest.

Purpose of study

- **The present study was carried out to study effects of heat-killed bacteria on cancer cell lines MCF7 and HT-29.**

- **The aim of this study was to analyze the effects of heat-inactivated bacteria on cancer cells in vitro to find whether a killed bacterium could have effects on cancerous cells or vitality is necessary for affecting.**

Introduction

Cancer is a refractory disease resulted from several changes in cell division-related genes. A great number of researches in recent years are allocated to know different aspects of cancer, including its reasons, prevention and treatment strategies

- A great number of researches over the last years are allocated to know cancer reasons, prevention and treatment strategies. Bacterial infections are one of the promoting factors in cancer development.

Methods

To this purpose, four bacterial strains including *Salmonella typhi*, *Staphylococcus epidermidis*, *Escherichia coli* and *Pseudomonas aeruginosa* were assayed.

Preparation of cell lines and bacterial species:

Inactivation of bacteria:

Thermal inactivation method was used to kill the bacteria and preserve the bacterial surface proteins unchangeable.

Methods continues

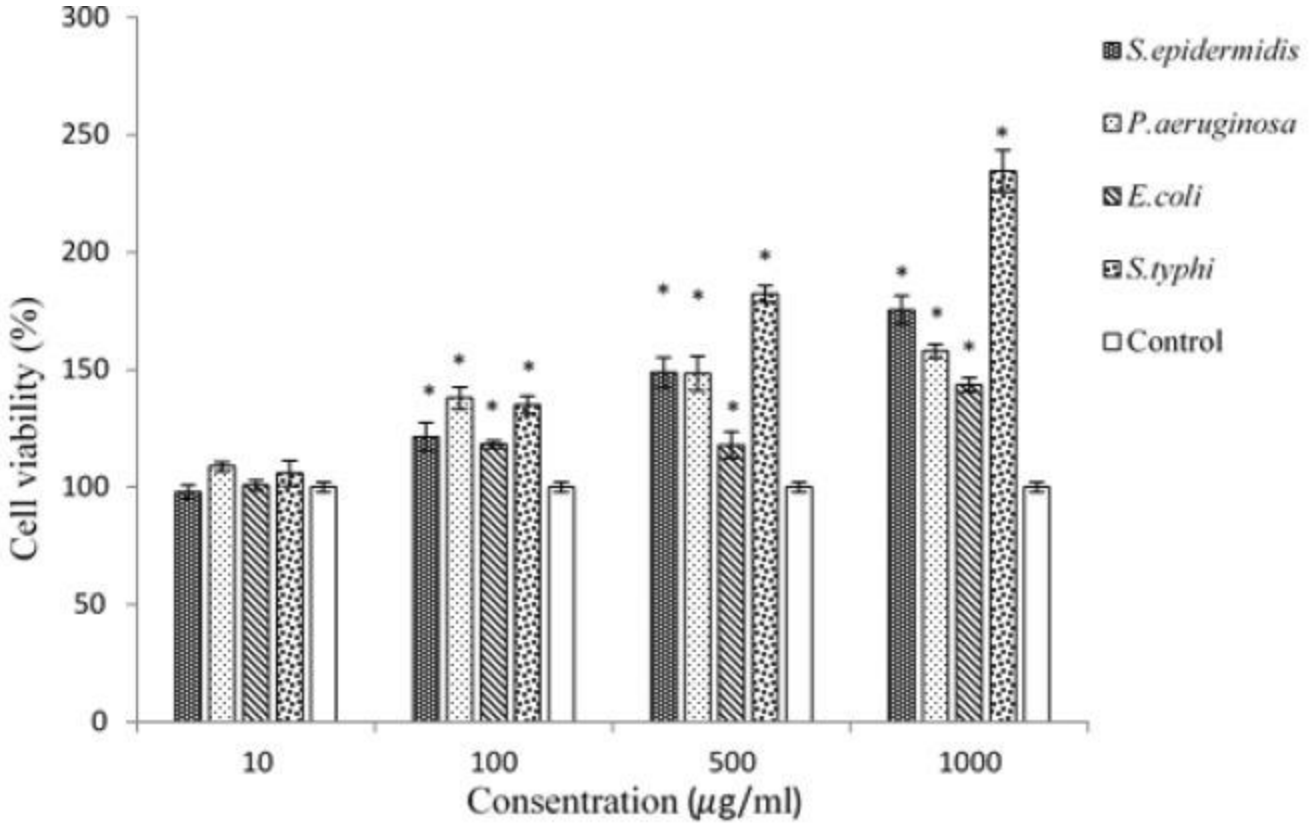
The concentrations of 0.01, 0.1, 0.5 and 1 mg/ml of inactivated bacteria were prepared to evaluate the effects of heat-inactivated bacterial solutions on MCF7 and HT-29 cell lines.

MTT assay was used to measure the cell viability of cancer cells treated with different concentration of inactivated bacterial solutions.

Results

The MTT assay results after 48 hours showed that the heat-killed bacterial solutions were able to induce the proliferation of both cancer cell lines.

In addition, the most cell viability in MCF-7 cell line was seen in samples treated with S. epidermidis, while in HT29 cells, the most one was seen in S. typhi treated samples.



The column graph of MTT assay results from HT-29 cell line treated with four different heat-killed bacterial strains. * Distinguishes the significant difference of samples compared to control

Conclusion

- In the MTT assay, the MCF-7 cell line was more influenced by bacterial treatment than HT-29 cells.

- In the present research, the results of MTT assay of *S. epidermidis, P. aeruginosa* and *S. typhi* on MCF-7 and HT-29 cell lines showed that presence of these bacteria in tumorous tissues, especially in breast cancer tissues, even after becoming cancerous, can exacerbate the growth of cancer cells.

- It was concluded that bacterial infections are cancer-deteriorating agents, and any species of bacteria is specific to certain cancerous tissue.

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