BACTERIA AS POTENTIAL TUMOUR FIGHTER

[1]U.N. Taraq Naem Zia, [1]C.H. Khoo, [1]C.P. Gwee, [1]S. Sukardi, [2]S.K Yeap, [1]Y.K. Cheah[*]

[1]Department of Biomedical Science, Faculty of Medicine and Health Sciences, Universiti Putra Malaysia, 43400 UPM Serdang, Selangor Darul Ehsan, Malaysia.
[2]Department of Cell and Molecular Biology, Faculty of Biotechnology and Biomolecular Sciences, Universiti Putra Malaysia, 43400 UPM Serdang, Selangor Darul Ehsan, Malaysia.

**Corresponding author: ykcheah@medic.upm.edu.my*

Despite significant progress in the development of therapeutic drugs and treatments, deaths due to cancer still remains high. These therapies are also not specific to tumour regions, hence causing adverse effects to the patients. Bacteria had long been studied for its ability to multiple within tumour regions and also reducing tumour volumes. *Salmonella* had also been studied and shown to be able to attack cancerous cells. To ensure the bacteria therapy is safe for clinical trial purposes, the bacteria need to undergo the process of silencing and *in vivo* assessment. This study was carried out to assess the use of SPI knockout *S.* Typhimurium and *S.* Agona as a possible tumour reduction agent and to investigate the effect of the SPI knockout strains on the survival of mice with induced tumour. 3 x 10^6 CT26 cells suspended in PBS were inoculated subcutaneously on the thigh to induce solid tumour. The subjects were then treated with the four bacterial treatments via intraperitoneal and intratumoural route of administration. The changes in the sizes of the tumours were observed daily using a calipher. The subjects were then sacrificed and the organs were harvested for histopathological analysis. One-way ANOVA indicated that the treatments had significant effects at $p < 0.05$, on both the changes of the tumour volumes and also the survival periods of the subjects. Subjects treated with *S.* Agona showed better survival compared to subjects treated with *S.* Typhimurium. *S.* Agona is found to be a better candidate as a tumour reduction agent, compared to *S.* Typhimurium, since it showed longer survival period of subjects after treatment and yet, had similar capacity as a tumour reduction agent.