

## A Novel Method of Using Salmonella Enterica Agona for Anti-Tumour Therapy

### TECHNOLOGY DESCRIPTION

This technology is a method to use Salmonella strain to treat cancer.

### TECHNOLOGY FEATURES

This technology is a frontier to both cancer treatment in animals and humans as cancer has the same characteristics and progression. This technology is also can be utilized for the purposes of cancer therapeutic, vaccines and gene delivery vector. The original source of Salmonella Agona is from an indigenous vegetable, locally known as 'Kangkong'. It enables generation of stable insertions or knockouts without any selection. The effect from this technology is similar to the anti-tumor effects from wild-type (parental) strain after genetic modification.

### ADVANTAGES

- Less toxicity compare to well-documented Salmonella Typhimurium as anti-tumour agent.
- Microbes sustainable replicates in tumor.
- Stable and permanent knockout strain.
- Less side effects as compare to chemotherapy and radiotherapy.

### INDUSTRY OVERVIEW

#### Prospect: Healthcare Industry

The global market for anti-tumor drugs is expected to surpass USD 110 billion by 2022, growing at a Compound Annual Growth Rate (CAGR) greater than 6% over the forecast period. The market growth may be attributed to increasing demand and continuous development in the field of medicine. The use of these drugs are seen as an alternative to the current most commonly methods such as chemotherapy, radiotherapy, laser, and surgery. Key players such as Roche, Novartis and Celgene dominate 70% market share in this industry. It is expected that by 2020, there will be an increase of 15 per cent in the number of cancer cases. The five main cancers which affected Malaysians are breast cancer (14.5 per cent), intestinal cancer (12.1 per cent), lung cancer (11.8 per cent), cervical cancer (5.7 per cent) and throat cancer (5.4 per cent). In 2014, cancer was the fourth major cause of death (13.02 per cent) in the government hospitals. The invention of salmonella enterica agona (*s. agona*) for anti-tumor therapy opens the new frontier in the human cancer medicine. Data from the Ministry of Health indicates that there are 132 government hospitals and 9 special medical institutions with 1039, 1821, and 254 health clinics, community clinics, and 1Malaysia clinics respectively, in Malaysia with an additional 214 categorized under private facilities. In addition, there are 637 SMEs that operates in the Healthcare industry and another 342 SMEs in the Pharmaceutical industry.



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