

&

4TH WORLD BIOTECHNOLOGY CONGRESS

May 20-21, 2019 London, UK

Waste Vs Cancer: An innovative biomedical approach

Ram Kumar Ganguly

Vidyasagar University, India

Vermitechnology involves vermiculture and vermicomposting process which emerged as a comprehensible and lucrative technology for management of organic wastes. During vermicomposting, waste materials while passing through the earthworms gut are homogenized in a highly bacterial rich environment into a highly mineralized chemical forms. The present study reflects compost as an incubator of different beneficial bacteria which opens up a new vista not only in vermitechnology but also its biomedical significance. A significant turnover of different enzymes such as leucine arylamidase, β -Glucosidase, Urease and α -celulase supported further by FT-IR analysis represents a changeover in compost. The bacterial metabolic products allied with earthworms have an exclusive physicochemical pre-eminence as a facilitator of apoptosis (programmed cell death in a MCF-7 cell line). Five strains of bacteria were isolated and identified using 16srRNA sequencing. The ethyl acetate extract of one of the bacteria *Bacillus anthracis* have been undertaken which show a significant anticancer and antioxidant activity. Antioxidant activity revealed through DPPH radical scavenging assay show a maximum effect of $(75.79 \pm 5.41\%)$ at $900 \mu\text{g ml}^{-1}$ concentration of the extract. Furthermore, a significant decrease in SOD and LDH activity were noticed upon application of extract. MTT assay showed a potent cytotoxic activity against MCF-7 cell line with an IC₅₀ value of $46.64 \pm 0.79 \mu\text{g ml}^{-1}$. Apoptosis was further confirmed through the nuclear fragmentation and DNA fragmentation analysis. Western blot analysis represents a down regulation of Akt protein, phosphorylated FOXO proteins. Increase of SOD activity along with decrease of Akt level reflects that the mode of action is entirely PI-3K dependent. It indicates that *B. anthracis* isolated from vermicompost could be potentially explored for the development of new therapeutic agents, especially against cancer. It will definitely open up a new vista in the area of waste management and bio-medical innovations.

Biography

Ganguly R.K. has completed Master of Science from Banaras Hindu University, India and had qualified several fellowship programs like CSIR-JRF, ICMR-JRF, GATE-JRF and SET JRF. He is now conducting the research work from Vidyasagar University and published a couple of international journals in different fields of biotechnology.

ramkumarganguly10@gmail.com

Notes: