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The sperm cell as a tool for rapid detection of cereulide producing *Bacillus cereus*

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Many physiological processes in spermatozoa are controlled by membrane potential and ion fluxes. Mammalian cell based bioassays helps in detection of physiological changes induced by analyte e.g. pathogen, toxins etc. Sperm cell *in vitro* bioassay was found to be useful in detecting cereulide producing *B. cereus* from non-producing bacteria. Use of the ejaculated sperm cell for studying the toxic effects of mitochondrial toxins provide several advantages over other *in vitro* systems due to their highly active, sensitive and sturdy mitochondria. Different *B. cereus* cultures were purchased from various National and International culture repositories. These were then plated on a tryptic soy agar medium and incubated for 24h at 30°C. It can be executed with single colonies picked directly from the primary culture plates without the need for a pure culture. Colonies which inhibit the motility of 50% of sperm cells were of cereulide producing *B. cereus* and which did not inhibit to an appreciable level was found to be the cereulide producing *B. cereus*. This potential bioassay is extremely non-laborious and can be executed with basic equipments present in most of the laboratories. Cereulide has a potassium ionophoric action which inhibits trans membrane potential and mitochondrial activity and further can be easily detected through the sperm cell. This bioassay is much better than chemical and molecular assay which are costly and time consuming.

Biography

Meenakshi Bamnia is a PhD scholar, enrolled from Aug 2011 in the Department of Animal Biochemistry, National Dairy Research Institute under the guidance of Dr. Gautam Kaul and has done MSc (Biotechnology) in 2011, from Thapar University under the supervision of Dr. Abhijit Ganguli, Assistant Professor. She has published two research papers and one abstract from her Master's research work on the topic "Evaluation of γ aminobutyric acid production by indigenously isolated lactic acid bacteria".

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