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ABSTRACT TITLE: SCREENING OF METABOLITES FROM MICROORGANISMS ASSOCIATED WITH ADAPTATION TO EXTREMOPHILIC ENVIRONMENT FOR HUMAN WELFARE

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Abstract

The ability of extremophile to persist in diverse extreme habitat give clue to enabled them for the applied industry to innovate corresponding specific exo- or endo-metabolite or bioproducts *i.e.* extremolytes for community benefit. Therefore, the current study was carried out to isolate, screen and identify the bacteria from different mine stone (approx ~780 million years old) sites (Fidusar, Kaliberi, etc) of Marwar region, Jodhpur (26.28^0 N; 73.02^0 E), Rajasthan, India, which is known for highly variable extremophilic environment and still unexplored for diversity of microbes, which may be a potential source for extremolytes, was preferred for study. To find unambiguous extremophile and their metabolites, soil collected from mine stone was cultured on various culture mediums (TYG agar, NA) at various laboratory conditions. Pure culture was identified by morphological, biochemical, physiological parameters. They were characterized by 16s r-RNA and their metabolite produce under various stressed conditions were screened comparatively by LC-MS. Isolates were flourished on TYG and nutrient agar media at vast temperature range 04^0-55^0C as well as at saline condition, in particular at low temperature condition (~4^0 C) able to produce orange colour pigment. Findings gave clue that maximum isolated bacterium belongs to gram –ve. Amongst all these isolated bacteria, *Bacillus maganeterium* and *Bacillus subtilis* was identified by 16s r-RNA. Stress condition induced metabolite was screened by high throughput technique LC-MS that indicated production of metabolites under specific stress condition. The extremophilic nature of these bacteria may be because of production of specific secondary metabolite or production of pigments. It is assumed that if metabolite help them to sustain under stress environment, may be useful as biotechnological applications in areas of human welfare such as bioremediation and therapeutics (radioprotector/mitigator).

Keywords - Extremophile, Extremolytes, Bioremediation, LC-MS.

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Professional Biography

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Dr. Dev Dutt Patel has completed his PhD at the age of 30 years from INMAS, Defence Research and Development Organization, Delhi in Radiation Biotechnology. Dr. Patel is currently working as Assistant Professor in Department of Zoology, University of Rajasthan, Jaipur, Rajasthan, India. He commissioned as lieutenant in NCC, a Unit of Army. He had also worked as Assistant Professor in Department of Zoology, Sri Venkateswara College, University of Delhi, Delhi. He has two patent published to his credit on microbial metabolite production and application. He has published more than 10 research papers in reputed International peer reviewed research journals. He is life member of scientific societies- Association of Microbiology of India (AMI), Indian Society for Radiation Biology (ISRB) and Indian Science Congress Association (ISCA), India.

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