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Biology in Space (8)

Author: Ms. Raghavi C H
R.V.College of Engineering, India, raghavich.bt16@rvce.edu.in

Mr. Sourav Umashankar
R.V.College of Engineering, India, souravmu.bt18@rvce.edu.in

Ms. Priyanshi Chaturvedi
R V College of Engineering, Bengaluru, India, priyanshic.ch18@rvce.edu.in

Ms. Anagha Mandayam Bhulokam
R.V.College of Engineering, India, anaghamb40@gmail.com

Mr. Suresh Gowda
R.V.College of Engineering, India, Sureshgowdas.ae18@rvce.edu.in

Mr. Sushanth M
R.V.College of Engineering, India, sushantham.ch17@rvce.edu.in

Ms. Sparsh Chhattani
R.V.College of Engineering, India, sparshchhattani.ei18@rvce.edu.in

GROWTH ANALYSIS OF METHANOBREVIBACTER SMITHII ON-GROUND AND IN
MICRO-GRAVITY**Abstract**

Gravity is not a constraint to swallow food but a slightest of change in it can certainly pose threat to micro-organisms involved in the metabolism of food. Understanding of complex cellular pathways and their impacts has always been a challenge to mankind. The problem gets magnified when considered at micro-level, as micro-organisms were always toughest survivors' ever being found, not just on earth, even extra-terrestrially. No wonder that these exist in our human body too, and many wide species are found in digestive tract. Gut microbiome encompasses a maximum concentration of an archaea *Methanobrevibacter smithii*, being a methanogen and a hydrogenotroph it plays a vital role in polysaccharide digestion. Anaeroxia being one of the threatening outrages of them, though non-virulent in optimal number, changes in their population in either ways can be very dangerous especially if considered to astronaut's physical health influenced by digestive system. The paper deals with a comparative study of on-ground anaerobic growth of *Methanobrevibacter smithii* in a medium of varying concentration as well as composition, which could enhance the growth of these microbes aiding astronauts with factors of obesity on real time analysis. Simulation of the experiment in microgravity conditions with optimised parameters mimicking gut environment can yield better results. Study of both the experiments and analysis of each of them with associative mathematical models yield growth curves in vivid fashion.