

Caenorhabditis elegans: A tiny worm model for ageing research

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Ageing and age-related diseases have an ever-increasing potential economic impact on the prosperity of nations. It is associated with an accumulation of damaged/discarded proteins in cells which correlates with a decline in normal physiological function of organism. The free radical theory of aging suggests reaction of reactive oxygen species (ROS) as the proximal cause of ageing. ROS is normally generated during metabolism and results in a declined cellular homeostasis. ROS contributed ageing can be slowed or modulated either through reduced ROS production, endogenous antioxidant genes or by increased repair mechanism. Indeed, genetic mutations and manipulations that confer resistance to oxidative stress also cause extended life-span; however, dietary restriction and dietary antioxidant supplements have been shown to have effects on ageing. *Caenorhabditis elegans* is one of the promising and experimentally proven models for ageing research worldwide. The adult *C. elegans* worm is self-fertilizing hermaphrodite with a 3-day life cycle, and a mean life span of approximately 18–20 days when cultured at 20°C. Importantly, more than 70% *C. elegans* genes have human homologues and the loss of function of the equivalent genes has also been shown to extend the lifespan of mammals. This suggests that mechanisms found to influence ageing in *C. elegans* are likely to have a conserved role in regulating longevity in humans. Besides its short lifespan, the ease of genetic and dietary manipulations has also led *C. elegans* to become established at the forefront of ageing studies. Large numbers of phytomolecules have proven their antiaging activity in *C. elegans* will be highlighted in the present lecture.

Biography

Rakesh Pandey has completed his Ph.D at the age of 28 years from Kanpur University, Kanpur, India and postdoctoral studies from Institute of Plant Disease, University of Bonn, Germany. He is the Senior Scientist, in CSIR - Central Institute of Medicinal and Aromatic Plants, Lucknow unique organization in field of medicinal and aromatic plants research. Dr. Pandey has published 80 research papers in reputed journals and serving as an editorial board member of important international journals of repute.

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Growth rate optimization of BHK-21/C13 cell line in coconut modified media

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The objective of current research was to study growth behavior of BHK Cell line in coconut water owing to its various similar useful components as FBS used in DMEM media. On comparing the growth rate, coconut water 10% (v/v) found to have comparable growth rate (0.205×10^6 cells/ml.hrs) as FBS 10% (v/v) (0.219×10^6 cells/ml.hrs) and there was overall (6.8%) improvement in the growth rate on mixing the two at equal ratio. Further improvements in growth rate were observed after application of Taguchi methodology where eight factors essential for growth were optimized by design of experiments at three levels viz. Temperature, FBS, Cell number, Coconut water, pH, Folic acid, Speed and NaHCO_3 . Thus, after eighteen experiments final optimized conditions were obtained which after validation shows overall 27.4% improvement in growth rate of BHK-21/c13 cell line. Thus, It can be helpful for growth of viral culture and vaccine preparation since are these are one of the few cell lines that can be grown both in suspension as well as anchorage dependent.

Keywords: Coconut Water, DMEM, FBS, BHK-21/C13 cell line, Cell growth rate, Cell viability, Taguchi methodology optimization.

Biography

S. M. Bhatt did his Ph.D from Banaras Hindu University, Varanasi, India in 2008. During this period he was awarded with senior research fellow from Department of science and technology, New Delhi. Before Joining to PhD Programme, he also worked as scientist at Transgen Biotech (P) Limited for short period and prepared techniques for vaccine against Japanese Encephalitis. He has 8 years of teaching and research Experience in Biotechnology and published more than 10 papers in reputed international journals along with 2 Patents and 2 Books and serving as an editorial board member in journal of repute. He joined Lovely professional University in 2010 and still working there. During this period he worked on Enzyme Production (cellulase), Bio-separation of Arsenic from water and Kinetics study of HK cell lines. His current focus is on Biofuel production by degradation of various cellulosic components.

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