



European Microbiology Research Conference

December 3-4, 2018 Valencia, Spain

Differential Response of Photosynthetic Apparatus in *Arthrospira platensis* PCC 7345 and NIES-39 towards High Alkaline pH Treatment

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Abiotic stress has deleterious effects on the organism's growth and functioning and ultimately its survival. Few cyanobacteria are reported to thrive well in extreme habitats by adapting themselves for various mechanism(s) of stress tolerance. We have studied the effect of alkaline pH on the pigment composition and the thylakoid protein profiles of *Arthrospira platensis* PCC 7345 and *Arthrospira platensis* NIES-39. Exposure of *Arthrospira platensis* PCC 7345 and NIES-39 cells to a high pH showed a differential effect on the photosynthetic pigments constituting the phycobilisome complexes and the photosystems. Our results therefore indicate that alkaline/high pH treatment of *Arthrospira* possibly leads to alteration in structural and functional organization of PBsomes and photosystems which may in turn effect the photosynthetic efficiency, reflected in difference of the of PC/Chla ratio among the two strains. From the pigment data, spectral analysis and the Urea-SDS PAGE analysis we would like to suggest that the two strains of *Arthrospira* studied might exhibit different strategies to tolerate alkaline pH. PCC 7345 showed an enhanced level of total carbohydrates at pH 11 as compared to NIES-39, suggesting an osmolyte mediated strategy to combat high alkaline environment.

Biography:

Monika M Jangir is a Ph.D scholar working in Birla Institute of Technology and Science Pilani, Pilani campus, Biological Science department. Pursued Master's and Bachelor's degree in Botany (Honors) from University of Rajasthan and was a University topper and gold medalist for all the 5 years of her degree program (2007-2012). Received POST-GRADUATE MERIT SCHOLARSHIP FOR UNIVERSITY RANK HOLDER (2010-12), Ministry of Human Resource Development, UGC, Government of India and DST-INSPIRE Scholarship by Department of Science & Technology (DST), Ministry of Science & Technology, Government of India (December 2013-Dec 2018). Currently working on a cyanobacteria named *Arthrospira platensis* NIES-39 to develop a deep understanding about the mechanism(s) of pH regulation during alkaline condition.