



Study of Pesticide-Induced Changes in *Anabaena fertilissima*, *Aulosira fertilissima* and *Westiellopsis prolifica*

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Abstract: The biotransformation of four pesticides to different functional groups on four days interval was studied using biomass of three different cyanobacterial species- *Anabaena fertilissima* Rao, *Aulosira fertilissima* Ghose and *Westiellopsis prolifica* Janet by Fourier Transform Infrared (FT-IR) Spectroscopy. This study demonstrated different absorption peaks associated with phenols and alcohols, aromatic amines, aromatics, carboxylic acids, 1°, 2° amines, alkynes, alkyl halides and nitro compounds generated by different concentration treatments of pesticides on *Anabaena fertilissima*. In 2,4-D and pencycuron treated *Aulosira fertilissima* the peaks of nitro compounds, 1°, 2° amines, aromatics, aromatic amines, carboxylic acids, 1° amines and aliphatic amines were involved in pesticide-biomass interaction. Moreover, the IR bands of Tebuconazole treated *Aulosira fertilissima* suggested unique functionalities, i.e., 1°, 2° amines and 1° amines, whereas no new peaks were recorded in Endosulfan treatments as compared to the untreated cultures. With respect to untreated biomass of *Westiellopsis prolifica*, differences in the peak patterns of four selected pesticide treated cultures were attributable to the presence of aromatic amines, aliphatic amines, carboxylic acids, aromatics, alkenes and 1° amines. Several other such changes were also evident and revealed that FT-IR technique proves to be an efficient tool for detecting structural and compositional changes in functional groups and probable binding sites induced by the presence of a pesticide contamination.

Keywords: Cyanobacterial species, Endosulfan, Fourier Transform InfraRed (FT-IR) spectroscopy, Pencycuron, Tebuconazole, 2,4-D

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