

Comparative Analysis of Enzyme Activities Concerned in Decomposition of Toluene

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Abstract : In recent years, pollutions of the environment by toxic substances become a serious problem. While there are many methods of environmental clean-up, the methods by microorganisms are considered to be reasonable and safety for environment. Compost is known that it catabolize the meladorous substanscess in its production process, however the mechanism of its catabolizing system is not known yet. In the catabolization process, organic matters turn into inorganic by the released enzymes from lots of microorganisms which live in compost. In other words, the cooperative of activated enzymes in the compost decomposes malodorous substances. Thus, clarifying the interaction among enzymes is important for revealing the catabolizing system of meladorous substance in compost. In this study, we utilized statistical method to infer the interaction among enzymes. We developed a method which combined partial correlation with cross correlation to estimate the relevance between enzymes especially from time series data of few variables. Because of using cross correlation, we can estimate not only the associative structure but also the reaction pathway. We applied the developed method to the enzyme measured data and estimated an interaction among the enzymes in decomposition mechanism of toluene.

Keywords : enzyme activities, comparative analysis, compost, toluene

Conference Title : ICSRD 2020 : International Conference on Scientific Research and Development

Conference Location : Chicago, United States

Conference Dates : December 12-13, 2020