

## **Influence of Fermentation Conditions on Humic Acids Production by *Trichoderma viride* Using an Oil Palm Empty Fruit Bunch as the Substrate**

**Authors :** F. L. Motta, M. H. A. Santana

**Abstract :** Humic Acids (HA) were produced by a *Trichoderma viride* strain under submerged fermentation in a medium based on the oil palm Empty Fruit Bunch (EFB) and the main variables of the process were optimized by using response surface methodology. A temperature of 40°C and concentrations of 50g/L EFB, 5.7g/L potato peptone and 0.11g/L (NH<sub>4</sub>)<sub>2</sub>SO<sub>4</sub> were the optimum levels of the variables that maximize the HA production, within the physicochemical and biological limits of the process. The optimized conditions led to an experimental HA concentration of 428.4±17.5 mg/L, which validated the prediction from the statistical model of 412.0mg/L. This optimization increased about 7-fold the HA production previously reported in the literature. Additionally, the time profiles of HA production and fungal growth confirmed our previous findings that HA production preferably occurs during fungal sporulation. The present study demonstrated that *T. viride* successfully produced HA via the submerged fermentation of EFB and the process parameters were successfully optimized using a statistics-based response surface model. To the best of our knowledge, the present work is the first report on the optimization of HA production from EFB by a biotechnological process, whose feasibility was only pointed out in previous works.

**Keywords :** empty fruit bunch, humic acids, submerged fermentation, *Trichoderma viride*

**Conference Title :** ICEBB 2014 : International Conference on Emerging Biosensors and Biotechnology

**Conference Location :** Montreal, Canada

**Conference Dates :** May 12-13, 2014