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American Journal of Food Technology   RSS

Title: Optimization of Physical Parameters for Biodegradation of Caffeine by *Pseudomonas* sp.: A Statistical Approach

Author: Swati Sucharita Dash and Sathyanarayana N. Gummadi

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Abstract: *Pseudomonas* sp. NCIM 5235 capable of degrading high concentrations of caffeine has been previously isolated from the soil of coffee plantation area. The isolate was capable of degrading 6.4 g L^{-1} initial concentration of caffeine at a rate of 0.1 g L^{-1} h^{-1}. In this study, the physical parameters viz., pH, temperature and shaking speed have been optimized using central composite design. The optimum values of pH, temperature and shaking speed were found to be 7.8, 28°C and 190 rpm, respectively. Under optimized condition of pH, temperature and shaking speed, the rate of degradation of caffeine has been enhanced from 0.18 to 0.29 g L^{-1} h^{-1} which is 1.6 fold higher than the normal rate. This is the first report on degradation of high concentration of caffeine at higher rates. Under optimal conditions, the strain has also been found to degrade caffeine at 15 g L^{-1} initial concentration efficiently within 48 h. This makes *Pseudomonas* sp. NCIM 5235 an attractive candidate for development of biodecaffeination strategies.

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