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Optimization of process parameters for decolorization of VAT blue 4 by the fungus Epicoccum thailandicum isolated from textile industry effluents.

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Vat dyes represent a distinct category of dyes characterized by their unique chemical properties. They originated from the natural dye indigo, which is now manufactured synthetically. These dyes are widely applied in coloring cellulosic fibres such as cotton, as well as wool and various other textiles. The present study focuses on the decolorization of Vat Blue 4. In the current investigation, Epicoccum thailandicum was isolated from textile industry effluents of Bangalore and identified using ITS gene based molecular method. The optimal conditions for Vat Blue 4 decolorization were determined using a one-factor-at-a-time approach. Optimal decolorization by Epicoccum thailandicum was achieved at pH 7, 30 ℃, with a dye concentration of 300 mg/L, supplemented with 100 mg/L each of maltose and ammonium nitrate, and an inoculum level of 3% (v/v). The significant factors influencing decolorization were identified using the Plackett–Burman design with Design Expert software. Maltose, pH and dye concentration were found to be the significant factors in decolorization of VAT blue 4 using Epicoccum thailandicum. Further studies with response surface methodology would be carried out using these significant factors.
Key words: Decolorization, Optimization, VAT Blue 4, Epicoccum thailandicum, Placket-Burman Design

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