

Optimization of red pigment production by solid state fermentation using oil palm frond

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ABSTRACT

Extensive study available on *Monascus* in solid-state fermentation (SSF), however, optimization study of *Monascus* sp. cultivated in stirred drum bioreactor is insufficiently reported. In this study, the Box–Behnken design (BBD) was employed for the analysis of the simultaneous effect of initial moisture content, aeration rate and peptone concentration to the red pigments production of *Monascus purpureus* FTC 5357 by using oil palm frond (OPF) in 5 L stirred drum bioreactor. A three-parameters, three-level BBD was used for the optimization. Based on the ANOVA analysis performed, initial moisture content, aeration rate and peptone concentration contributed significantly to the red pigments production. The optimal fermentation conditions resulted were initial moisture content; 70 % w/w, aeration rate; 1.30 vvm and peptone concentration; 4.40 % w/w. Under these conditions, the red pigments production were obtained to be 18.59 Au/g.d. The red pigments produced through SSF using OPF as a substrate by *Monascus purpureus* FTC 5357 has a great potential to be utilized as a source of pigment for food in future.

KEYWORDS

Aeration rate; *Monascus* pigments; Moisture content; Peptone; Solid state fermentation

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