

Evaluation of Kithul Treacle as a Potential Substrate to Grow *Monascus purpureus* in Preparation of *Monascus*-fermented Black Tea

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Monascus purpureus is a valuable fungal strain that produces different bioactive pigments, and it is being used to produce a variety of food products. The secondary metabolites synthesized by *M. purpureus* are used as colorants for culinary purposes, food supplements, preservatives, and traditional medicine. Monacolin K is a secondary metabolite produced by *M. purpureus* that is identical to the structure of lovastatin and used as a drug to inhibit 3-hydroxy-3-methylglutaryl coenzyme A (HMG-CoA) reductase. The present study aimed to produce *Monascus* fermented black tea using *M. purpureus*. Due to its lack of nutrients and high polyphenol content, black tea is not a favorable substrate for the optimum growth of *M. purpureus*. Therefore, it is necessary to identify a favorable substrate to grow *Monascus* on black tea. Kithul (*Caryota urens* L.) treacle is a nutrient-dense medium that has the potential to proceed with the liquid-state fermentation of *M. purpureus*. Kithul treacle, having a lot of health benefits, was investigated as a potential substrate for *M. purpureus*. For this purpose, different dilutions—1:1, 1:2, and 2:1—of authentic kithul treacle (density 1.346 g/mL) to distilled water were tested, and authentic kithul treacle was identified as a potential substrate for the growth of *M. purpureus*. Mycelial growth was observed after 4 days in each dilution without black tea leaves and after 7 days with black tea leaves in test tubes. Visible pigment developed in test tubes without tea leaves after 12 days in 1:1 and 2:1 dilutions and after 14 days in 1:2 dilutions. Furthermore, compared to the control (tea leaves without *Monascus* inoculation), a visible density of color development was observed after 10 days in test tubes with tea leaves that were inoculated with *M. purpureus*, confirming pigment development by *Monascus*. Altogether, these results confirmed the possibility of growing *M. purpureus* on the black tea leaves with kithul treacle as a substrate to produce *Monascus*-fermented black tea.

Keywords: *Monascus purpureus*, Monacolin K, Kithul Treacle, Black Tea Leaves, Mycelial Growth