

Production of natural microbial colouring pigments by *Monascus purpures* in Sri Lankan rice varieties

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Abstract

Colouring agents are essential food additives used in the food industry and natural colouring agents have a high commercial value. Production of natural colouring agents from microorganisms is advantageous because they are natural, rapid production compared to plant extractions and has no seasonal limitations. *Monascus purpures* is a fungus that produces six major pigments, including red pigment suitable for food and it also has some health benefits such as reducing blood cholesterol and triglyceride levels. Therefore, this study aimed to assess the pigment production by *Monascus purpures* in Sri Lankan rice (*Oryza sativa*) varieties. Solid substrate fermentation was performed with 10 different samba rice varieties. The fungus was grown on PDA and agar blocks containing fungal mycelia were used as the inoculums. The fermentation medium prepared with 25 g of rice samples were inoculated and incubated for 14 days at room temperature. The dried, powdered fermented rice samples were subjected to ethanol extraction, and the concentration of pigments was determined using different wavelengths in the Spectrophotometer. The rice varieties were also tested with supplementation of the fermentation medium with both organic and inorganic nitrogen sources. Out of the ten rice varieties, the red samba variety LD 368 had the highest pigment production and the absorbance was 34.48 at the red shift, 33.95 at the orange shift and 73.20 at the yellow shift. The results also revealed that when compared the three different pigment production in each rice variety, the concentrations of the red and orange colour pigments were very much similar, but the concentration of the yellow colour pigment was varied. Similar results were observed with all ten tested rice varieties. The results also indicated no difference in the pigment production in the presence or absence of the nitrogen sources in the fermentation medium.

Keywords: *Monascus purpures*, Pigment Production, Solid State Fermentation, Sri Lankan Rice

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