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Characterization and optimization of fruit body yield in *Volvariella volvacea* white strain

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The paddy straw mushroom [*Volvariella volvacea* (Bull.) Singer] normally forms dark grey or brownish coloured fruit bodies, and it leads to lesser acceptance in market compared to button mushroom with white or off-white fruit bodies. In the present study, we attempted morphological and molecular characterization of the white strain of *V. volvacea vis-a-vis* brown strains, standardization of its cultivation technology and nutritional profiling of fruit bodies. The white strain (GVv-01) formed a separate clade in phylogenetic tree deduced from the 5.8S rRNA gene sequences compared to brown strains along with a 21 nucleotides long deletion in ITS-2 region. It exhibited highest downward mycelial growth on paddy straw and formed morphologically distinct colony on malt extract agar medium. It gave highest fruit body yield both at 25-28 and 30-35°C conditions with shortest first harvest period. It also yielded well on cotton ginning mill waste, cotton ginning mill waste + paddy straw (1:1, w/w) and paddy straw based substrates. Its mean fruit body weight (16.89 to 23.31 g) on different substrates was also higher compared to brown strains. The fruit bodies had higher crude fibre, ash and contents of calcium, potassium, sodium, zinc, magnesium, copper and iron compared to brown strains.

Keywords: 5.8S rRNA gene, Mycelial growth, Paddy straw mushroom