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Tryptophan Enhanced Accumulation of Phenolic Compounds via Chorismate Mutase Activation in the *Ganoderma neo-japonicum*[1]

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ABSTRACT

The aim of this study was to investigate the effect of tryptophan (Trp) on the production of total phenolic compounds (TP) in the mycelial culture of *Ganoderma neo-japonicum* (*G. neo-japonicum*). Among various amino acids tested, Trp was best for increasing the TP content by 13.2-fold compared to the control. Trp also increased the phenylalanine content via Trp-specific activation of chorismate mutase. Although 12 mM of Trp was the optimal concentration for TP production, it significantly inhibited mycelial growth. This growth inhibition was reversed by the addition of yeast extract (YE) in a dose-dependent manner. Consequently the combined addition of Trp (12 mM) and YE (8 g/L) stimulated TP production up to 73.5 mg gallic acid equivalent per g dry weight of mycelial culture. Furthermore, the phenolic profiling revealed that quercertin occupied 34.1% of the total amount of phenolic compounds tested and the resveratrol concentration increased at the highest rate (49.1-fold) compared to that of the control. These results provided strong evidence that the accumulation of phenolic compounds in the *G. neo-japonicum* mycelia was regulated by the availability of substrates involved in the phenylpropanoid pathway, which may be useful in regulation and optimization of *G. neo-japonicum* culture for efficient production of valuable nutraceuticals.

Keywords : *Ganoderma neo-japonicum, Mycelial culture, Phenolic compounds, Tryptophan*

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