Determination of some phenolic compounds from fermented unpolished black rice with anti-tyrosinase activity

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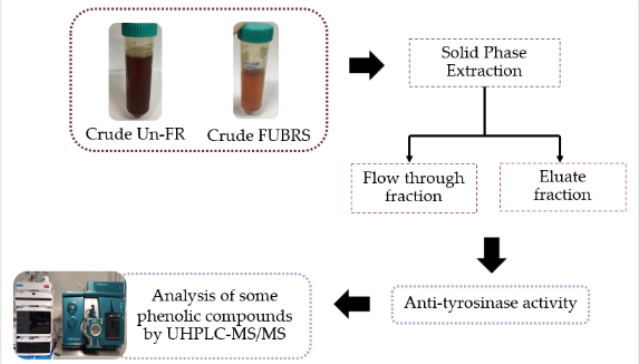
Abstract: Tyrosinase is a key rate-limiting enzyme in melanin synthesis. The phenolic compounds are beneficial to human health that have been reported as tyrosinase inhibitors. Our previous study found that the fermented unpolished black rice sap (FUBRS) could reduce melanin synthesis in B16F10 cell, while such activity could not be detected in the unfermented rice (Un-FR). This study aimed to investigate some phenolic compounds previously reported as tyrosinase inhibitors in the FUBRS by using ultra high-performance liquid chromatography coupled with tandem mass spectrometry (UHPLC-MS/MS). The results showed that the FUBRS sample showed higher tyrosinase inhibitory activity than Un-FR sample. Analysis of some phenolic compounds by UHPLC-MS/MS revealed top three compounds including protocatechuic acid, vanillic acid and ferulic acid in both FUBRS and Un-FR. However, the level of these compounds was much higher in FUBRS than those in Un-FR. Taken together, we demonstrated that the fermentation of unpolished black rice yielded some phenolic compounds containing anti-tyrosinase activity. The potential compounds in FUBRS having anti-tyrosinase activity will be further investigated.

Graphical abstract:



Keywords: fermented unpolished black rice; phenolic compounds; anti-tyrosinase activity; UHPLC-MS/MS

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