

Abstract

This research proposed to extract and study the cosmetic activities of water soluble polysaccharides from 4 edible Thai mushrooms. These were *Auricularia auricular* (AA), *Tremella fuciformis* (TF), *Volvariella volvacea* (VV) and *Pleurotus sajor-caju* (PS). Three different methods of hot water shaking, microwave-assisted and ultrasonication-assisted extractions were compared. Extraction yield, polysaccharide content, antioxidant capacity and tyrosinase inhibitory activity were employed to evaluate the results. Proximate composition analysis showed the VV possessing the highest protein of 29.72% followed by the PS of 27.57%. The highest fiber content was observed in the polysaccharides from the AA, whereas the most content of carbohydrate at 77.85% was found in the TF.

Extraction with hot water shaking provided the higher polysaccharide yield than those from the microwave and ultrasonication assistances. Considering to the type of mushroom, the AA and VV provided the highest yield of 15.58-15.88% followed by the TF and PS possessing 13.68% and 9.07%, respectively. The extraction yields corresponded to polysaccharide contents in which the AA and VV showed the greatest values of 179.75 and 176.53 mg glucose equivalent/g (GE/g). These values were not significantly different at $p < 0.05$.

Antioxidant capacities assayed by Ferric reducing antioxidant power (FRAP) and ABTS radical scavenging of all water soluble mushroom polysaccharides were detected. The sonication assistance provided the higher activities of polysaccharides than those from the shaking and microwave extractions. Greater antioxidant capacity of 10.89 mg TEAC/g was obtained from the polysaccharide from VV, followed by the PS, AA and TF possessing 6.60, 2.82 and 0.74 mg TEAC/g, respectively. Similarly, the ABTS radical scavenging capacity of sample extracted by sonication provided the highest values ranged 10.14-13.90 mg TEAC/g which were found in the VV and AA.

The highest tyrosinase inhibitory activity was also found from the ultrasonication in which the 96.36 mg KAE/g of AA was not significantly different from those of TF and PS (95.33 and 86.77 mg KAE/g) at $p < 0.05$.

คำสำคัญ: *Auricularia auricular*; *Tremella fuciformis*; *Volvariella volvacea*; *Pleurotus sajor-caju*; cosmetic activity, polysaccharides