PHENOLIC PROFILES AND ANTIOXIDANT ACTIVITIES OF WILD EDIBLE AND CULTIVATED MUSHROOMS AS AFFECTED BY EXTRACTION SOLVENTS AND TEMPERATURE

LEE MEI YEE

B. Sc. (Hons.) Food Science and Nutrition
Faculty of Applied Sciences
UCSI University

2008

ABSTRACT

This study aimed to determine the effects of extraction conditions, viz. solvent type and extraction temperature on the yields of phenolic substances and antioxidant capacity of extracts from wild mushrooms, for instance, *Hygrocybe conica*, *Lentinus ciliatus*, *Pleurotus* sp., *Schizophyllum commune* and also cultivated mushroom, *Pleurotus ostreatus*. The antioxidant activities were assessed by 2,2-diphenyl-1-picrylhydrazyl (DPPH) and 2,2-azinobis(3-ethylbenzothiazoline)-6-sulfonic acid (ABTS) radical scavenging activity, ferric reducing antioxidant power (FRAP), and ß-carotene bleaching (BCB) assay. In addition, three antioxidant-related composition, namely, total phenolic content (TPC), total flavonoids content (TFC), and condensed tannins content (CTC) were also investigated. Results indicated that water extract of mushroom species had significant influence ($p<0.05$) on the extraction of TPC, TFC, and CTC. Water extract of *Pleurotus* sp. at the extraction time of 330 minutes with a temperature of 40°C showed the highest DPPH scavenging ability as well as FRAP ($P<0.05$). The water extract of *Schizophyllum commune* has got the highest ABTS scavenging ability and ß-carotene bleaching activity at extraction time and temperature of 240 minutes and 25°C. A significant ($p<0.05$) linear correlation between antioxidant activity and TPC was found in most of the mushrooms extract. This proved that phenolic compounds could make a significant contribution to the antioxidant activity in the mushroom extracts. With high antioxidant activity, the wild and cultivated mushrooms have good potential for health food and nutraceutical industry. The results showed high antioxidant activity of water extract of wild and cultivated mushrooms were comparable with synthetic antioxidants (BHA) and ascorbic acid.