Effect of Resveratrol Addition on Antioxidant and Anti-Tyrosinase Activities of Polygonum cuspidtum Extracts

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ABSTRACT

The resveratrol (Res) contents of the freeze-dried Polygonum cuspidatum (one of Chinese traditional medicine) extracted with 70% ethanol solution (0.7EtOH) were first investigated in this study. The Res contents, anti-oxidative (DPPH-free-radical- scavenging effect) and anti-tyrosinase activities of the EEPC and WEPC dilutions of freeze-dried P. cuspidatum extracts diluted with 0.7EtOH and RO water, respectively, were also studied and compared with those of commercial 50%- and 98%-purity Res. Finally, the anti-tyrosinase activities of the EEPC and WEPC dilutions added with various purity (50%, 98%) Res were investigated. Among the EEPC and WEPC dilutions of the freeze-dried P. cuspidatum extracts (FDPCE), the DPPH-scavenging effects of EEPCs first gradually increased to a certain value as increasing their sample concentrations or Res contents. When the sample concentration was over 125 ?慊/mL, the value of DPPH-scavenging effect of EEPC was kept at around 95%, which was higher than those (about 93% and 90%) of 50% and 98% Res, respectively. The value of DPPH-scavenging effect of WEPC was below 60% and shown in random pattern. When the sample concentration was over 25 ?慊/mL, the value of DPPH-scavenging effect became lower than those of 50% and 98% Res. For the EEPCs of FDPCE, the anti-tyrosinase activities gradually increased up to a certain value as increasing their sample concentrations. The value of the anti-tyrosinase activity (%) of EEPC was about 87%, which was higher than those of 50% and 98% Res, when the sample concentration was over 100 ?慊/mL. For the 0.7EtOH dilutions of 50% and 98% Res, the anti-oxidative activities first increased up to the maximum values and then decreased as increasing their sample concentrations or Res contents. The maximum values were close to 88-90% when the sample concentrations or Res contents were close to 10-25 ?慊/mL or 15 ?慊/mL, respectively. The values of the anti-tyrosinase activities of WEPCs were gradually increased as increasing their sample concentrations or Res contents, but the values were below 30%. However, the anti-oxidative activities of 50%, 98% and 99% Res diluted with RO water first increased to some certain values and then decreased as increasing their sample concentrations. For the individual or both addition of 50% and 98% Res in EEPC, the anti-tyrosinase activity values decreased as increasing Res addition concentrations or contents. The inhibition effects of 50% and 98% Res addition were not increased as synergistic effect as expected maybe due to the ethanol denaturation of tyrosinase by adding 0.7EtOH. The anti-tyrosinase activity values for the individual addition of 50% or 98% Res in WEPC increased as increasing Res addition concentrations or contents, and were shown in little synergistic effect. However, the values for both addition of 50% and 98% Res in WEPCs over 50 ?慊/mL, were not shown in synergistic effect and decreased as increasing Res addition concentrations or contents. This unexpected result may be due to the over content of Res in WEPC. Therefore, it is not necessary to increase the anti-tyrosinase activity value for the over high addition of Res.

Keywords : Polygonum cuspidatum ; Resveratrol ; anti-oxidative activity ; anti-tyrosinase

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