ABSTRACT

The objective of this study was to figure out the optimal conditions for polyphenol extraction from *Polygonum multiflorum* Thunb. roots using pectinase-assisted extraction method. In this research, total phenolic contents (TPC) were determined by the Folin Ciocalteu method and antioxidant capacity (AC) was analyzed by free radical scavenging activity method with Trolox and DPPH as standard reagents. They were describe by gallic acid equivalent (GAE) and Trolox equivalent (TE), respectively. We examined factorials that gave the highest total phenolic content and strongest antioxidant capacity including material/solvent ratio (1/5 - 1/13), enzyme concentration (0.1% - 0.5%), extraction time (40 - 120 minutes), pH (3.5 - 5.5) and extraction temperature of (30°C - 70°C). The optimal extraction conditions achieved such as the material/solvent of 1/11 (w/v), enzyme concentration of 0.2% (v/w), extraction temperature at 50°C, pH at 4.5, extraction time at 80 minutes. TPC and AC peaked at 44.36 mg GAE/g DW (dry weight) and 80.43 µmol TE/g DW. After treatment, the materials were changed strongly and were also observed by scanning electron microscopy (SEM). Some extractive compounds of phenolic such as gallic acid and catechin were determined by HPLC method.