Enzymatic synthesis of polyphenol glycosides catalyzed by transglycosylation reaction of cyclodextrin glucanotransferase derived from *Trichoderma viride*

ABSTRACT

Present study was conducted to evaluate the ability of *Trichoderma viride* as a source of cyclodextrin glucanotransferase that has shown transglycosylation activity in the presence of polyphenolic constituents extracted from *Moringa oleifera* leaves as its acceptor and wheat flour as its substrate to catalyze synthesis of polyphenolic glycosides as transglycosylation (transfer) reaction products. The enzymatic synthesized polyphenolic glycosides were then purified using octa-dodecyl-functionalized silica gel column chromatography prior to analysis using thin layer chromatography and high performance liquid chromatography and identified using nuclear magnetic resonance (NMR) spectroscopy. The high performance liquid chromatogram performed that the isolated transglycosylation products had retention times and concentration at 1.446 min (0.0017 mg/ml), 1.431 min (0.14 mg/ml), and 1.474 min (0.012 mg/ml), respectively, compared to the retention time of arbutin (1.474 min) that was applied as authentic standard for polyphenol glycoside. Moreover, observation using ^{1}H NMR as well as ^{13}C NMR showed that structures of the transglycosylation products were identified as gallic acid-4-O-β-glucopyranoside, ellagicacid-4-O-β-glucopyranoside, and catechin-4′-O-glucopyranoside, respectively.