

Antioxidant properties of polyphenol of moringa oleifera leaves and polyphenol glycoside catalyzed by trans glycosylation of *Trichoderma viride*

ABSTRACT

Purpose of this study was to synthesize polyphenol glycoside as transfer products that may have some biological activities, by application of trans glycosylation reaction in the present of polyphenolic compound which was extracted from *Moringa oleifera* leaves as its acceptor and different flours as its substrate for the trans glycosylation. The reaction was catalyzed by glucosyltransferase derived from fungal culture of *Trichoderma viridae* as a source of crude enzyme. The formation of transfer products was determined using TLC and HPLC which exhibited that polyphenol glycoside could be synthesized through the enzymatic reaction. The study had shown that substrates such as starch, maltodextrin, corn flour, wheat flour, rice flour and cassava flour were also as potential substrates to synthesis the polyphenol glycoside in the presence of polyphenolic extract as acceptor. The result of HPLC analysis presented that the isolated glycosides had retention times and concentration of 1.446 (0.0017 mg/ml), 1.431 (0.14mg/ml), and 1.474 (0.012mg/ml), respectively, as compared to the retention time of arbutin (1.474) that was applied as authentic standard. Observation using ¹H NMR as well as ¹³C NMR showed that structures of the transfer products were identified as gallic acid-4-O-β-glucopyranoside, ellagic acid-4-O-β-glucopyranoside, and catechin-4'-O-gluco pyranoside, respectively. IC₅₀ value of EAGP for DPPH was 46.12μg/ml as compared to ascorbic acid (35.96μg/ml), BHT (39.73μg/ml) and α-tocopherol (42.62μg/ml) respectively, while IC₅₀ value of EAGP for ABTS was 64.01μg/ml as compared to ascorbic acid (30.13μg/ml), BHT (38.09μg/ml) and α-tocopherol (54.84μg/ml) respectively, whilst IC₅₀ value of EAGP for H₂O₂ was found to be 51.90μg/ml while for BHT, ascorbic acid and α-tocopherol were 44.18μg/ml, 47.18μg/ml, and 49.57μg/ml, respectively.