

Synthesis of polyphenol glycoside by using maltodextrin through enzymatic transglycosilation reaction of bacterial strain

Abstract

Indigenous microbial strains produced a glycosyl transfer enzyme (CGTase EC. 2.4.1.19) of *Bacillus licheniformis* BL-1 in an acetate buffer pH 5.5 at 45°C for 24h, yielding polyphenol glycoside as transfer product in the presence of maltodextrins. Those were hydrolysed from different sources of starch as a donor-substrate and polyphenols from rhizomes as an acceptor. Those were considered to have interesting biological activity such as antimicrobial and antioxidant. It was found that polyphenol-glycoside, as the transfer product, exhibited high antimicrobial activity at MIC 200ppm on the growth of *Bacillus subtilis*, *Escherichia coli* and *Saccharomyces cerevisiae*, however no effect was observed when it was assayed on *Candida tropicalis*, while arbutin and flavonoid-aglycon showed very low inhibitory activity on the growth of two out of four tested microbial strains. We suggested that the polyphenol glycoside possessed antioxidative activity from the view point of retaining the bleaching value of β -carotene. The result showed that polyphenol glycoside was found to be higher than of arbutin as authentic glycoside and polyphenol aglycone, however, it was lower than of BHT (butylated hydroxy toluene), a commercial antioxidant product. This result suggested that polyphenol glycoside possessed considerable antioxidative activity by chelating free radicals, and this effect seems to be available for practical use.