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**Abstract**

Resistant starch type 3 (RS3) is retrograded starch which is not digested by human starch degrading enzyme, and will thus undergo bacterial degradation in the colon. The main fermentation products are the Short Chain fatty Acid (SCFA) ; acetate, propionate and butyrate. SCFA has significant benefit impact on the metabolism of the host. The objectives of this research were to study the SCFA profile produced by colonic butyrate producing bacteria grown in medium containing RS3. RS3 was made from sago or rice starch treated with amylase, pullulanase, and the combination of amylase and pullulanase.

Fermentation study was performed by using *Clostridium butyricum* BCC B2571 or *Eubacterium rectale* DSM 17629, which has been identified as capable of degradation of starch residue and also regarded as beneficial bacteria. Experimental result revealed that enzyme hydrolysis of retrograded sago or rice starch was beneficial to RS formation. RS3 derived from sago contained higher RS (31-38%) than those derived from rice starch (21-26%). This study indicated that *C. butyricum* BCC B2571 produced acetate, propionate and butyrate at molar ratio of 1.8 : 1 : 1, when the medium was supplemented with RSSA at concentration 1%. In the medium containing similar substrate, *E. rectale* DSM 17629 produced acetate, propionate and butyrate at molar ratio of 1.7 : 1 : 1.2. High levels of acetate, propionate and butyrate at molar ratio of 1.8 : 1 : 1.1 was also produced by *E. rectale* DSM 17629 in medium supplemented with RSSP at concentration 1%. The result showed that both bacteria responded differently to the RS3 supplementation. Such result provided insight into the possibility of designing RS3 as prebiotic with featured regarding SCFA released in the human colon with potential health implication.

Keywords : Resistant starch, Clostridium butyrate, Eubacterium rectal, Short Chain Fatty Acid.