報告番号	香大医博甲第 779号

様式１０２

学位論文の内容の要旨

Summary of the Substance of Dissertation

専攻 Major Field	医学	部門 Department	
学籍番号 Student No.	17D719	氏名 Name	Miad Elahi
論文題目 Thesis Subject	The Human Gut Microbe *Bacteroides thetaiotaomicron* Suppresses Toxin Release from *Clostridium difficile* by Inhibiting Autolysis		

(論文要旨)

Disruption of the human gut microbiota by antibiotics can lead to *Clostridium difficile* (CD)-associated diarrhea. CD overgrowth and elevated CD toxins result in gut inflammation. Herein, we report that a gut symbiont, *Bacteroides thetaiotaomicron* (BT), suppressed CD toxin production. The suppressive components are present in BT culture supernatant and are both heat- and proteinase K-resistant. Transposon-based mutagenesis indicated that the polysaccharide metabolism of BT is involved in the inhibitory effect. Among the genes identified, we focus on the methylerythritol 4- phosphate pathway gene *gcpE*, which supplies the isoprenoid backbone to produce the undecaprenyl phosphate lipid carrier that transports oligosaccharides across the membrane. Polysaccharide fractions prepared from the BT culture suppressed CD toxin production *in vitro*; the inhibitory effect of polysaccharide fractions was reduced in the *gcpE* mutant (Δ*gcpE*). The inhibitory effect of BT-derived polysaccharide fraction was abrogated by lysozyme treatment, indicating that cell wall-associated glycans are attributable to the inhibitory effect. BT-derived polysaccharide fraction did not affect CD toxin gene expression or intracellular toxin levels. An autolysis assay showed that CD cell autolysis was suppressed by BT-derived polysaccharide fraction, but the effect was reduced with that of Δ*gcpE*. These results indicate that cell wall-associated glycans of BT suppress CD toxin release by inhibiting cell autolysis.

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（備考）論文要旨は，日本語で１，５００字以内にまとめてください。
(Recital) Sum up the within １５００ letters.