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The association between dietary intakes and gut microbiota in preschool children in Japan

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Objective: Human microbial composition is affected by the host factors of age, race, geographical difference, and dietary patterns. Preschool age has been identified an important period in which their gut microbiota evolves from an infant to adult style. Preschool children also make a transition in eating behaviors and patterns that is influenced by their parent food preferences. However, little is known about the gut microbiota in preschool children in Japan. The aim of this study is to examine the association between dietary intakes and gut microbiota composition, as well as the relationship between child and parent food intakes.

Methods: We compared the dietary intakes and fecal microbiota of 17 healthy children, aged 4 to 6 years, living in Sakurai City, Nara Prefecture. Children's diet was quantified by a 3-day diet record method and parents' diet by a brief self-administered diet history questionnaire (BDHQ). Fecal samples were analyzed by the terminal restriction fragment length polymorphism (T-RFLP) targeting the 16S rRNA gene.

Results: The microbiota of preschool children was enriched in *Bifidobacterium*. In children who have a 'fat energy ratio' exceeding 30%, Firmicutes-to-Bacteroidetes (F/B) ratio tends to be relatively high. Protein intake correlated negatively with the F/B ratio. Parent intake was positively related to child intake of specific food groups such as oils and fats, vegetables, and fruits.

Conclusion: The alterations in diet may induce changes in gut microbiota. Changing parent intake may be important in helping to change the dietary patterns of preschool children.

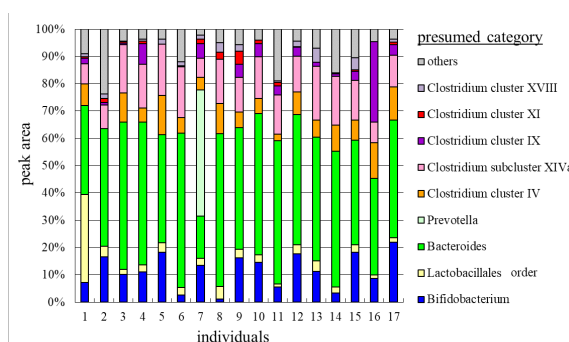


Figure 1 : Relative abundance of gut microbiota in preschool children (%)

Biography

Mitsuru Shibata became an Assistant Professor at the Department of Health and Nutrition, Faculty of Health Science at Kio University in 2013. She is active as a Registered Dietitian. She has a passion for helping people transform their eating habits and lead healthy lives. Her current study is on the gut microbiota in Japanese people and on the effective dietary education to children.

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