FUNCTIONAL DYSPEPSIA: A NOVEL FIELD FOR THE INTRODUCTION OF GASTRIC PROBIOTICS

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Introduction:
Functional dyspepsia (FD) is defined as the presence of symptoms thought to originate in the gastroduodenal region (postprandial fullness, early satiation, epigastric pain or burning) in the absence of any organic, systemic or metabolic disease that is likely to explain the symptoms. FD has considerable impact on quality of life and loss of productivity. Epidemiological surveys suggest that around 30% of the general population has these symptoms over the course of a year and this percentage is reasonably constant around the world. The underlying pathophysiology in FD is incompletely understood. To date no medicine has definitely been approved for the treatment of FD. The aims of the present study are; first to examine the therapeutic effect of a probiotic strain, Lactobacillus gasseri OLL2716 (LG21), on the FD symptoms by randomized placebo-controlled clinical trial (RCT), second to investigate the mechanism how LG21 improves the symptoms.

Methods:
In the RCT, 58 and 58 adult subjects were randomly allocated to LG21- and placebo-treated groups, respectively. The LG21-treated group had 10 to the 9th CFU LG21 in yogurt everyday for 12 weeks. The placebo-treated group had yogurt without LG21 in the same way. In the analyses of the therapeutic mechanism of LG21, the volume, pH and bacterial count of the gastric fluid obtained after overnight fasting and the stomach-related serum enzymes such as pepsinogens I and II were measured in another 42 FD patients before and after LG21 treatment.

Results:
In the RCT, 54 and 52 subjects in the LG21 and placebo groups, respectively, completed the trial without any significant side effects. 10 subjects dropped out due to moving away and taking prohibited drugs during the trial. Per protocol analysis demonstrated that LG21 treatment significantly improved “postprandial fullness” after 4, 8 and 12 weeks. Moreover these improvements by LG21 treatment were significantly greater than the improvements by placebo treatment at both 8 and 12 weeks. LG21 treatment also significantly ameliorated “early satiety” after 4, 8 and 12 weeks. In the analysis of stomach-related biomarkers in the FD patients, LG21 treatment significantly decreased the volume but increased the pH value of the gastric fluid. LG21 treatment also significantly increased serum pepsinogen I level.

Discussion:
LG21 has unique properties of both acid resistance and gastric mucosa adhering ability, therefore has been used as a stomach-targeted probiotic strain. So far LG21 has been demonstrated to suppress Helicobacter pylori in the human stomach. Furthermore in the present study, LG21 was demonstrated to significantly improve the FD symptoms. While the mechanism how LG21 ameliorates the symptoms still remains elucidated, the reduction of acidity by LG21, at least, is thought to be involved in the improvement because high acidity is supposed to be one of the pathogenic factors leading to FD. The causal relationship between the changes in the gastric fluid volume/serum PGI and the amelioration of symptoms still remains to be clarified.

Keywords: Stomach, Functional, Dyspepsia, Probiotics, LG21

Citation: