

Effects of Oral MCT intake on Bowel Function

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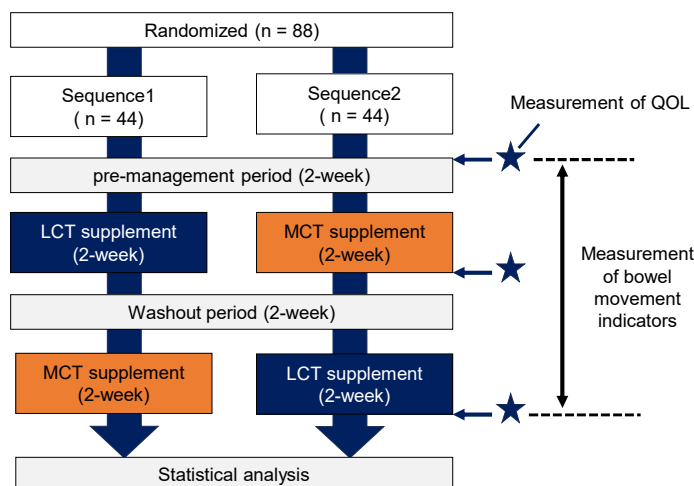
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Introduction

In Japan, approximately 36% of individuals report some symptoms linked to constipation¹⁾. Chronic constipation has been associated with reduced survival rates²⁾ and an increased risk of ischemic stroke and coronary artery disease³⁾. Additionally, chronic constipation negatively affects quality of life (QOL)⁴⁻⁵⁾. Therefore, improving bowel movements in individuals prone to constipation as a preventive intervention is clinically significant. Medium-Chain Triglycerides (MCTs) are lipids composed solely of medium-chain fatty acids (MCFAs) and are used as a nutritional supplement for preterm infants and others due to their properties as an energy substrate⁶⁾. Recent evidence has suggested that MCTs may also improve bowel movements⁷⁾. However, there are few reports evaluating the effects of continuous consumption of small amounts of MCTs in Japanese populations prone to constipation. In this study, we investigated the effects of consuming 2 g of MCTs daily for two weeks on bowel movement frequency in Japanese men and women with a tendency toward constipation.

Methods

- ◆ Design: Randomized, double-blind, placebo-controlled, crossover trial.
- ◆ Population: 88 Japanese adults (aged 20–64 years, 3–5 times/week bowel movement frequency)
- ◆ Intervention: MCT supplement (jelly; 2 g of MCTs/day) for 2 weeks. Control: LCT supplement (jelly; 2 g of LCTs/day) for 2 weeks.
- ◆ Outcomes: Bowel movement indicators (number of days with bowel movements, bowel movement frequency, stool volume), health-related QOL.
- ◆ Statistical analysis: Mann–Whitney U test was used.



- Health-related QOL was assessed using the SF-36.
- Bowel movement indicators were recorded daily by participants using a diary.

Results

Three participants dropped out from Sequence 1 and three from Sequence 2, leaving 82 participants for analysis.

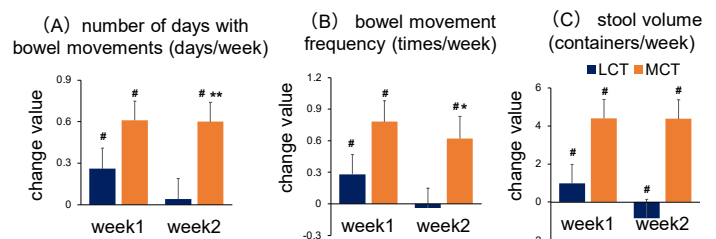


Figure. Bowel movement indicators

Error bars indicate SE in the positive direction only.
**Significantly different from the control group ($P < 0.05$).
*Marginally different from the control group ($P < 0.1$).
#Significantly different from the baseline ($P < 0.05$)

Compared with LCT, MCT significantly increased the number of bowel movement days in Week 2 and tended to increase bowel movement frequency in Week 2.

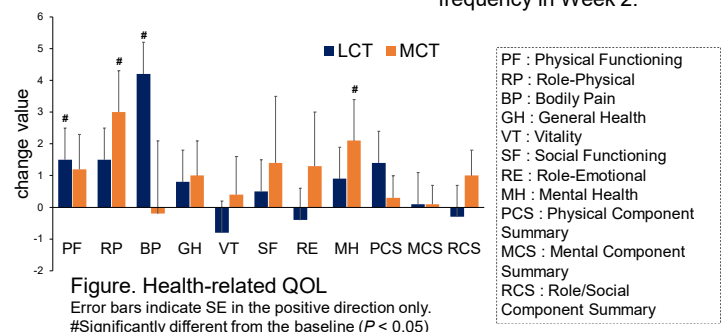


Figure. Health-related QOL

Error bars indicate SE in the positive direction only.
#Significantly different from the baseline ($P < 0.05$)

Although no significant between-group differences were observed, MCT intake significantly improved RP and MH scores. In addition, LCT intake significantly improved PF and BP scores.

Discussion & Conclusion

The improvement in QOL observed in this study may have been influenced by MCT-induced improvements in bowel habits, although no between-group differences were observed. Possible mechanisms by which MCT intake improved bowel habits include involvement of: (1) bile acids, (2) ghrelin, and (3) the gut microbiota. (1) MCTs have been suggested to increase the influx of bile acids into the colon^{8,9)}. It is known that the influx of certain bile acids into the colon enhances the secretion of water and electrolytes and accelerates colonic transit^{10,11)}. (2) Octanoic acid, a constituent of MCTs, is used for the acylation of ghrelin, a gastrointestinal hormone. It is known that MCT intake increases circulating acylated ghrelin levels¹²⁾. Increased acylated ghrelin is known to enhance upper gastrointestinal motility¹³⁾ and may subsequently augment the gastrocolic reflex. (3) It has been reported that MCT intake alters the gut microbiota and increases fecal short-chain fatty acid concentrations¹⁴⁾. Short-chain fatty acids have been shown to improve bowel habits by enhancing intestinal motility¹⁵⁾. However, because there are also conflicting reports regarding the involvement of MCTs and gut microbiota, further research is needed. This study suggests that even small amounts of MCTs may improve bowel movements and help maintain or improve QOL in Japanese men and women with a tendency toward constipation.

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Conflict of interest: This work was supported by The Nisshin OilIIO Group, Ltd. YO, HI, KK, SW and NN are employees of the Nisshin OilIIO Group, Ltd., Tokyo, Japan. The company is engaged in the manufacturing and sale of products related to edible oils and fats.